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SEWER SYSTEM MASTER PLAN

Final Report

February 2001

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February 20, 2001
4581B.00

Baldo Rodriguez, Principal Civil Engineer
City of Porterville
291 N Main Street
Porterville, CA 93285

Subject: Sewer System Master Plan Update - Final Report

Dear Mr. Rodriguez:

We are pleased to submit the final report for the City of Porterville Sewer System Master Plan Update. The report presents master planning assumptions, existing sewer collection system evaluation, recommended facility improvements, and a capital improvement program to the planning horizon year 2015. This master plan incorporates the proposed Hillside Residential Land Use Category. The report is organized as follows:

Chapter 1 - Introduction
Chapter 2 - Planning Area Characteristics
Chapter 3 - Planning and Design Criteria
Chapter 4 - Existing Sewer System and Hydraulic Model
Chapter 5 - Sewer System Evaluation and Proposed Facilities Improvements
Chapter 6 - Capital Improvement Program

We would like to extend our thanks to you, Hal Hill, Michael Unser, Michael Reed, Richard Bartlett, Ron Mauck, and other City staff whose courtesy and cooperation were valuable components in completing this study and producing this final report.

Sincerely,

CAROLLO ENGINEERS, P.C.

David L. Stringfield, P.E.
Principal

Tony Akel, P.E.
DLS/TAA:cjp

Enclosure - Final Report

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City of Porterville
SEWER SYSTEM MASTER PLAN
Final Report

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY

1.0 BACKGROUND AND PURPOSE ES-1

2.0 PLANNING AREA AND GROWTH TRENDS ES-1

3.0 PLANNING CRITERIA AND SEWER FLOWS ES-2

4.0 COMPUTER HYDRAULIC MODELING ES-4

5.0 RECOMMENDATIONS ES-4
Existing Deficiencies ES-4
Expansion Improvements ES-5

6.0 CAPITAL IMPROVEMENT PROGRAM ES-5

7.0 CONNECTION FEES ANALYSIS ES-6

8.0 SUMMARY ES-6

CHAPTER 1 - INTRODUCTION

1.0 BACKGROUND 1-1

2.0 AUTHORIZATION AND SCOPE 1-1

3.0 REPORT ORGANIZATION 1-2

4.0 ACKNOWLEDGMENTS 1-3

5.0 ABBREVIATIONS AND DEFINITIONS 1-3

CHAPTER 2 - PLANNING AREA CHARACTERISTICS

1.0 PLANNING AREA 2-1

2.0 LAND USE 2-1
Hillside Residential (HR) 2-4
Rural Density Residential (RD) 2-4
Low Density Residential (LD) 2-4
Medium Density Residential (MD) 2-4

TABLE OF CONTENTS
(cont.)

Page

High Density Residential (HD) 2-4
Commercial (NC, GC, HC, HWYC, and PO) 2-4
Industrial (IND) 2-4
Public and Quasi Public (PQ) 2-5
Recreation and Open Space (OS) 2-5
Agriculture (AG) 2-5
Special Categories (PAT, SCH) 2-5

3.0 POPULATION AND STAGED GROWTH 2-5

CHAPTER 3 - PLANNING AND DESIGN CRITERIA

1.0 DESIGN CAPACITIES 3-1
Gravity Sewers 3-1
Pipe Capacities 3-1
Manning Coefficient (n) 3-1
Flow Depth Criteria (d/D) 3-2
Changes in Pipe Size 3-2
Pump Stations 3-4
Force Mains 3-5

2.0 DESIGN FLOWS 3-5
Wastewater Flow Components 3-5
Wastewater Treatment Facilities Flows 3-6
Flow Monitoring Program 3-8
Design Flow Criteria 3-8

3.0 PLANNING AND DESIGN CRITERIA SUMMARY 3-15

CHAPTER 4 - EXISTING SEWER SYSTEM AND HYDRAULIC MODEL

1.0 EXISTING SEWER SYSTEM 4-1
Trunk Sewers 4-1
Pump/Lift Stations 4-7
Porter Vista Public Utility District 4-7
Flow Diversions 4-9

2.0 HYDRAULIC MODEL 4-9
Hydraulic Model Selection 4-9
Elements of the Hydraulic Model 4-9
Hydraulic Model Calibration 4-10

TABLE OF CONTENTS
(cont.)

Page

CHAPTER 5 - SEWER SYSTEM EVALUATION AND PROPOSED FACILITIES IMPROVEMENTS

1.0 EXISTING COLLECTION SYSTEM DEFICIENCIES 5-1
Trunk Sewers 5-1

2.0 EXPANSION IMPROVEMENTS 5-2
Grand-Newcomb Relief Trunk 5-2
Grand Avenue Trunk 5-2
Henderson-Westfield Trunk 5-2
Morton Avenue Trunk 5-5
Newcomb-Linda-Vista Trunk 5-5
Jaye-Poplar Trunk 5-5
W. North Grand-Main Trunk 5-5
Airport Service Area Trunks 5-6

CHAPTER 6 - CAPITAL IMPROVEMENTS PROGRAM

1.0 COST ESTIMATING ACCURACY 6-1

2.0 COST ESTIMATING CRITERIA 6-1

3.0 CAPITAL IMPROVEMENT PROGRAM DEVELOPMENT 6-2
General Information 6-2
Proposed Facilities & Appurtenance Costs 6-2
Baseline Construction Cost 6-2
Estimated Construction Cost 6-2
Capital Improvement Cost 6-3

4.0 SEWER CONNECTION FEES ANALYSIS 6-3
Adjusted Cost of 1990-1995 Capital Improvements 6-7
Recommended Connection Fees 6-9

LIST OF TABLES

2.1 Historical and Projected Population 2-6
3.1 Recommended Minimum Slopes for Circular Pipes 3-3
3.2 Historical Monthly Sewer Inflows at WWTF (1995-1998) 3-7
3.3 64-Year Average Monthly Rainfall (1931 to 1995) 3-8
3.4 Wet/Dry Weather Peaking Factors @ WWTF (1995-1998) 3-9
3.5 Temporary Flow Monitoring Program - Site Descriptions 3-10
3.6 Temporary Flow Monitoring Program - Instantaneous Flows 3-10

TABLE OF CONTENTS
(cont.)

Page

3.7 Average Sewer Flow Coefficients 3-14
3.8 Planning and Design Criteria Summary 3-17
4.1 Existing Lift Stations 4-8
4.2 Model Calibration Results 4-13
5.1 Proposed Lift Stations Upgrade 5-7
6.1 Capital Improvement Program 6-4
6.2 Updated Costs of 1990-1995 Capital Improvements 6-8
6.3 Revised Sewer Connection Fees 6-10

LIST OF FIGURES

ES.1 Planning Area ES-3
2.1 Planning Area 2-2
2.2 Land Use 2-3
2.3 Staged Growth 2-7
3.1 Historical Monthly Sewer Inflows at WWTF (1995-1998) 3-7
3.2 Peak Hour Factors at WWTF (1995-1998) 3-9
3.3 Temporary Flow Monitors Location 3-11
3.4 Flow Monitoring Program Diurnal Pattern. 3-12
3.5 Peaking Factor Curve. 3-16
4.1 Existing Trunk Sewer System 4-2
5.1 Proposed Improvements 5-3

LIST OF APPENDICES

A Flow Monitoring Program
B Hydraulic Model Input File
C Hydraulic Model Results

Executive Summary

Executive Summary

SEWER SYSTEM MASTER PLAN

The City of Porterville recognizes the importance of planning, developing, and financing future sewer system facilities to provide reliable service for existing customers and for anticipated future development. On December 4, 1997, the City authorized Carollo Engineers to prepare a Sewer System Master Plan that evaluates the existing sewer system and recommends necessary system improvements to meet sewer collection requirements through the year 2015. The findings and recommendations of this study, as summarized in this report, will assist City staff in planning, developing and financing the required sewer collection facilities in a timely cost-effective manner. The preparation of the Sewer System Master Plan has been coordinated with the preparation of the Water System Master Plan, which was concurrently completed by Carollo Engineers.

1.0 BACKGROUND AND PURPOSE

The City's sewer collection system consists of approximately 150 miles of 6-inch through 36-inch diameter sewers, including 18 sewage lift stations and associated force mains. In 1997, a population of over 35,000 and commercial and industrial users contributed to influent flows at the wastewater treatment facility (WWTF) averaging 4.82 million gallons per day (mgd). Previous studies related to this master plan include the 1989 Sewer System Master Plan.

This Sewer System Master Plan provides the City of Porterville with a tool for planning its sewer requirements through the year 2015. The study addresses the following tasks:

- Evaluation of the existing sewer collection system, using computer hydraulic modeling techniques.
- Determination of existing system deficiencies and proposing improvements to correct deficiencies.
- Recommendations for improvements needed to service anticipated future growth, within the Urban Development Boundary.
- Developing a Capital Improvement Program (CIP) with a horizon year of 2015.
- Performing a sewer connection fees analysis based on a review of the constructed 1989 Master Plan facilities, and on the needed CIP costs through the year 2015.
- Training City staff on the use of the sewer hydraulic model.

2.0 PLANNING AREA AND GROWTH TRENDS

The planning area for this master plan coincides with the City's Urban Development Boundary (Figure ES.1). The area is generally bounded by W. North Grand Avenue to the north, the Friant-Kern Canal to the northwest, Teapot Dome Avenue and the Porterville

Airport on the southwest, Scranton Avenue and the Porterville Development Center on the southeast, and Hillcrest Street and Reid Avenue on the northeast. The planning area also includes a strip of land north of W. North Grand Avenue and east of Highway 65.

From 1970 to 1996, the City experienced growth rates which ranged from 0.40 to 11.54 percent, with an annual average of 3.88 percent. The City's historical growth rates are identical to other San Joaquin Valley cities' historical growth rates, which typically average 3.0 percent per year. Population projections presented in the City's 1994 General Plan, which reflect a growth rate of 3.5 percent through the planning horizon year of 2010, were adopted for this master plan .

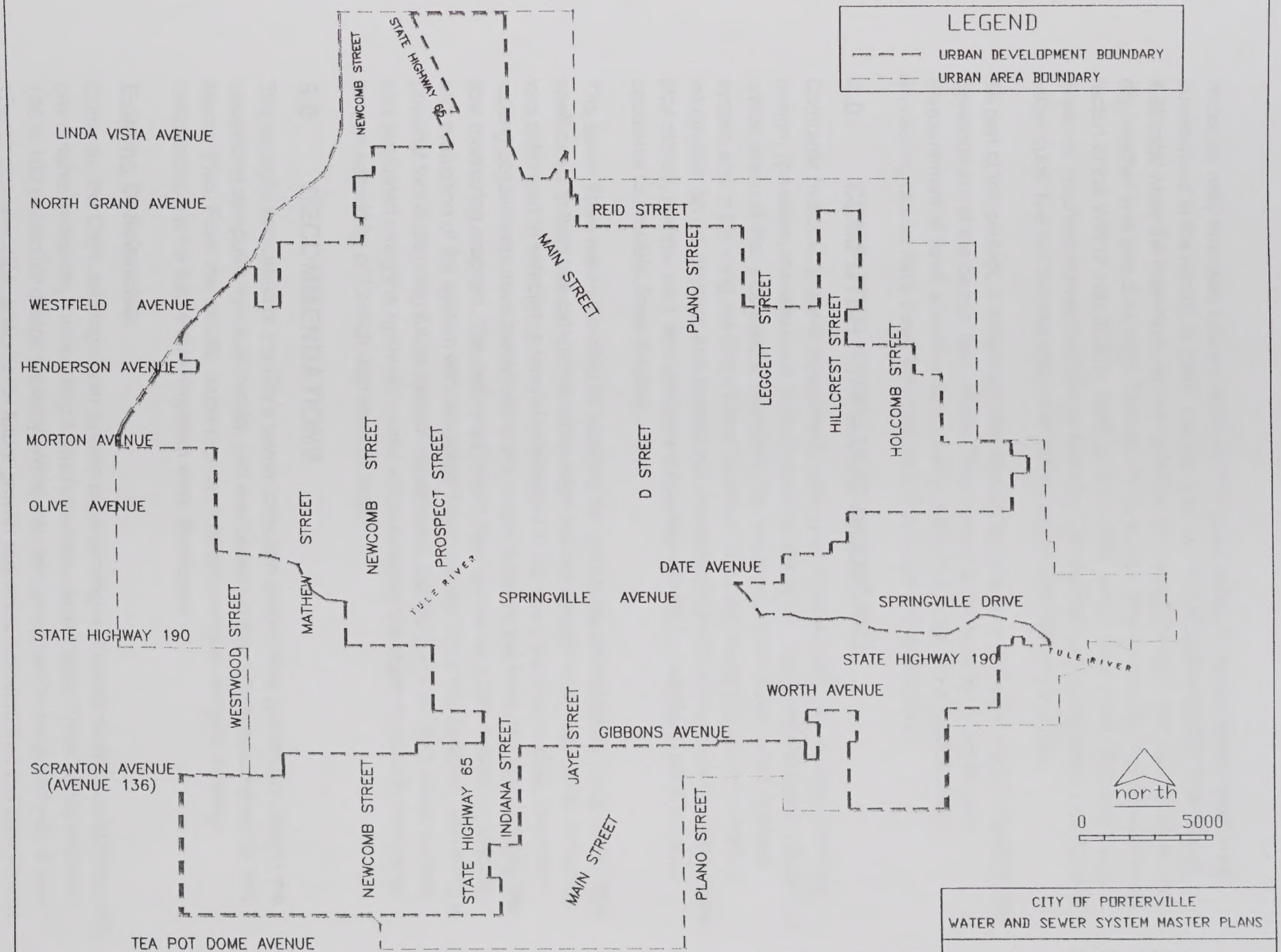
The City's planning department provided assistance in the development of a 5-year incrementally staged growth plan through the planning horizon year of 2015. Population and staged growth projections provided guidance for this Master Plan to forecast future sewer flows and the staging of future sewer system improvements. Should growth trends change in the future, the recommendations of this Master Plan may need to be adjusted accordingly.

3.0 PLANNING CRITERIA AND SEWER FLOWS

Sewer system master planning requires the development of design criteria in order to define existing system capacities. Acceptable depths of flow within pipes, flow velocities, acceptable pipe gravity slopes, energy losses, and peaking factors all work together to predicate a system's capacity. The hydraulic criteria used for designing the proposed improvements to the City's sewer system had a greater factor of safety than those used to model the existing system. The difference between design criteria and analysis criteria allows for maximum utilization of the existing sewer system, thus preventing unnecessary pipe replacements.

The sewer design flow criteria used in this master plan were established based on a review of historical flows, as measured and recorded at the Wastewater Treatment Facility (WWTF), and supplemented with a flow monitoring program instigated for this master plan. Peak flows, for which sewer facilities are sized, are based by applying a peaking factor to average flows. Peaking factors generally range between 1.5 and 3.0, depending on the size of the tributary area, with larger areas correspond to smaller peaking factors. The measured sewer flow peaking factor at the City's WWTF is approximately 2.4 times higher than the average flows. Table 3.8 provides a comprehensive summary of the recommended planing criteria for the City's sewer system master plan.

Average day flow coefficients are multipliers developed for each land use category, and which are applied to land acreages yielding average flows. The coefficients can be expressed in either gallons per day per acre (gpda) or in gallons per minute per acre (gpma). The report summarizes the existing and planned future land use acreages, and tabulates the recommended coefficients.



CITY OF PORTERVILLE
WATER AND SEWER SYSTEM MASTER PLANS

PLANNING AREA
Figure ES.1

DECEMBER 2000

carollo engineers

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Historical daily flow data influent to the WWTF were collected for the years 1995-1998 summarized in the report. In 1997, the average day flow measured at the WWTF was 4.82 mgd while the maximum day wet weather flow was 5.64 mgd and the maximum day dry weather flow was 5.41 mgd. The ratio of peak hour flow to average day flow (peaking factor) at the WWTF was 2.06 in 1997, 2.38 in 1996, and 1.86 in 1995. The report also presents graphical curves that can be used by City staff for estimating peak hour flows in either cubic feet per second (cfs) or in million gallons per day (mgd) units.

As part of this project, a temporary flow monitoring program was conducted to assist in the development of the design flow criteria. The primary purpose of the program was measurement of flows at twelve sites located along the major trunk sewers. Flow monitoring results have been summarized in the report and appendices.

4.0 COMPUTER HYDRAULIC MODELING

Computer hydraulic analysis is a powerful tool used in sewer collection system planning, design, operation, management, and emergency response. The hydraulic sewer model is a critical element that was used in evaluating the adequacy of the City's existing sewer system and in planning the City's future facilities. The City's hydraulic model combines information on the physical and operational characteristics of the sewer system (pipe sizes, pipe slopes, pumps. etc.), and performs calculations to solve a series of mathematical equations to simulate flows in pipes.

The sewer flows were estimated by applying the previously developed average sewer flow coefficients to land use categories within each defined service area. The hydraulic model was calibrated to establish a level of confidence in the flows that it simulates, Diversion routing adjustments were performed in the model to mimic the flows measured during the flow monitoring program. The calibrated model then serves as a benchmark for analysis and evaluation of the system with simulated future design flows and facilities, becoming a powerful tool in planning future system expansions. Capacity of the City's sewer system was evaluated using the hydraulic model which included the major trunk and interceptor sewers consisting of 12-inch diameters or larger.

5.0 RECOMMENDATIONS

The capacity evaluation of the City's sewer collection system was performed utilizing the assembled computer hydraulic model, and was based on the criteria established for this Master Plan. From the results, recommended improvements to mitigate existing deficiencies and for future sewer system were developed.

Existing Deficiencies

Currently, the City's existing sewer system is performing well under existing conditions, with one notable exception. The existing 12-inch diameter Jaye-Poplar Trunk varies between 135 to 160 percent of design capacity. While this deficiency can be mitigated with a new 15-inch diameter pipe, analysis for future growth scenarios indicated that this pipe should

be replaced with a new 21-inch diameter pipe. It is thus recommended that this pipe be replaced with a new 21-inch diameter pipe. This project is quantified in the Capital Improvement Program of this master plan.

Expansion Improvements

Future developments will be serviced by constructing new trunk sewers that extend into the City's expansion areas. Since flows from these developments are routed through the existing trunk sewer system, they sometimes result in capacity deficiencies that require pipe size upgrades.

Grand-Newcomb Relief Trunk. As growth continues to occur in the City's south and southeast expansion area (south of Tule River), as well as in the airport area, the capacity of the existing Grand-Newcomb Trunk will become deficient. The portion of the trunk sewer along Newcomb Avenue is 27 inches in diameter, while the portion along Grand Avenue is 30 inches. Per directions from City staff, it is proposed that the existing trunk sewer along Newcomb Avenue remains in service, and be paralleled with a new sewer that includes 27 and 30-inch pipes. It is recommended that the portion along Grand Avenue be replaced with a new 45-inch pipe.

Grand Avenue Trunk. Growth in the northeast expansion area will increase the sewer flows routed through the Grand Avenue Trunk and will result in a capacity deficiency. It is proposed that the existing 21-inch and 18-inch portions of this trunk, between the WWTF and G Street, be replaced with new 27-inch and 24-inch pipes, respectively.

Other recommended improvements, including new lift stations and upgrades to existing lift stations, are listed by staged growth requirements and quantified in the Capital Improvement Program of this master plan. It should be noted that modifications to the predicted staged growth may require adjustments to the recommended improvements.

6.0 CAPITAL IMPROVEMENT PROGRAM

The cost estimates presented in the Capital Improvement Program have been prepared for general master planning purposes and for guidance in project evaluation and implementation. Final costs of projects will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule, and other variable factors such as: preliminary alignments generation, investigation of alternative routings, and detailed utility and topography surveys.

Knowledge about site-specific conditions for each proposed project is limited at the master planning stage, therefore the Estimated Construction Costs include a 15 percent contingency to account for unforeseen events and unknown field conditions. The Capital Improvement Costs also include an additional 15 percent (applied to the Estimated Construction costs) for project-related costs, comprised of engineering, administration, construction inspection, and legal costs.

The Capital Improvement Program (CIP) Costs for facilities required to correct existing deficiencies have been separated from those required to service anticipated future expansion areas, as follows:

- Improvements to Correct Existing Deficiencies $77,000
- Expansion Improvements (2000-2005) $3,343,000
- Expansion Improvements (2005-2010) $3,064,000
- Expansion Improvements (2010-2015) $4,056,000

7.0 CONNECTION FEES ANALYSIS

Connection fees are charges imposed by the City on new developments, for recovering the costs of public facilities needed to service those developments. In order to continue to meet the intent of Assembly Bill 1600 (AB 1600), the scope of work for this project included an analysis and update of the costs of the 1989 Master Plan improvements which have been built. Following the review of the constructed projects' "as-built" drawings and associated costs, the resulting adjustment was incorporated into the recommended connection fee analysis. This analysis determined that a rate increase to the connection fees is not necessary at this time. The current rates are:

- Hillside $700 per acre
- R-1 $1,300 per acre
- R-2 $3,023 per acre
- R-3 & R-4 $7,052 per acre
- Institutional $490 per acre
- Commercial $1,838 per acre
- Industrial $7,846 per acre

8.0 SUMMARY

Using hydraulic modeling, the City's sewer collection system was evaluated for capacity of the pipes and pump stations.

The capacity evaluation has identified areas of the sewer system that need improvements to accommodate current, as well as future (year 2015), flow conditions. The improvements were prioritized and their cost estimated and included in the Capital Improvement Program.

Chapter 1

Chapter 1

INTRODUCTION

This chapter presents a brief background of the City's sewer system, the need for this sewer system master plan, and the objectives of the study. A list of abbreviations is also provided to assist the reader in understanding the information presented in this report.

1.0 BACKGROUND

The City of Porterville is currently experiencing moderate population and industry growth. Recognizing the importance of planning, developing, and financing sewer system facilities to provide reliable service for existing customers and to serve anticipated growth, the City initiated the preparation of this sewer master plan.

The City's sewer collection system consists of approximately 150 miles of 6-inch through 36- inch diameter sewers, and includes 18 sewage lift stations and associated force mains. In 1997, flows measured at the wastewater treatment facility averaged at 4.82 million gallons per day (mgd), with a maximum day dry weather measurement of 5.41 mgd and a maximum day wet weather measurement of 5.64 mgd. Previous studies relevant to this master plan include the 1989 Sewer System Master Plan.

2.0 AUTHORIZATION AND SCOPE

On December 4, 1997, the City authorized Carollo Engineers to prepare a sewer system master plan that evaluates the existing sewer collection system, provides recommended improvements, and develops a Capital Improvement Program.

The sewer system master plan provides the City of Porterville with a tool for planning the sewer infrastructure facilities through the projected planning horizon year of 2015. If planning conditions change, and depending on their magnitude, adjustments to the master plan recommendations might be necessary.

This report addresses the following tasks:

- Evaluation of the existing sewer collection system, using computer hydraulic modeling techniques.
- Determination of existing system deficiencies and proposing improvements to correct deficiencies.
- Recommendations of improvements needed to service anticipated future growth, within the Urban Development Boundary.
- Developing a Capital Improvement Program with a horizon year of 2015.
- Performing a sewer rate analysis based on a review of the constructed 1989 Master Plan facilities.

- Training City staff on the use of the hydraulic model.

3.0 REPORT ORGANIZATION

The Sewer System Master Plan report contains six chapters, followed by appendices that provide supporting documentation for the information presented in this report. The chapters are briefly described below.

Chapter 1 - Introduction presents a brief background of the City's sewer system, the need for this Sewer System Master Plan, and the objectives of the study. A list of abbreviations is also provided to assist the reader in understanding the presented information.

Chapter 2 - Planning Area Characteristics defines the study area of the master plan, provides a summary of land use categories within the Urban Development Boundary (UDB), presents potential trends for future growth, and lists historical as well as projected population within the UDB. The projections of future land use trends and population growth was performed to estimate future sewer flows.

Chapter 3 - Planning and Design Criteria included in this chapter served as a guide for evaluating Porterville's sewer system. Historical flows at the wastewater treatment facility were reviewed and analyzed to determine daily, monthly and seasonal fluctuations experienced by the Porterville sewer system. The developed criteria addresses the sewer system capacity, acceptable pipe gravity slopes, acceptable depths of flow within pipes, average sewer flow coefficients, and daily and hourly peaking factors.

Chapter 4 - Existing Sewer System and Hydraulic Model describes the existing sewer system and the hydraulic sewer model assembled for evaluating the collection system. This chapter also presents the results of the flow monitoring program and calibration effort which was performed to establish a level of confidence in the City's hydraulic model.

Chapter 5 - Sewer System Evaluation and Proposed Facilities Improvements includes the capacity evaluation of the City's sewer collection system, which was performed utilizing the assembled computer hydraulic model, and was based on the criteria established in a previous chapter. This chapter presents proposed facilities improvements to mitigate existing deficiencies and for expansion of the future sewer system.

Chapter 6 - Capital Improvement Program presents the recommended Capital Improvement Program (CIP) for the City of Porterville sewer collection system. The program is based on the evaluation of the Porterville sewer collection system, and on the recommended projects described in the previous chapter. The CIP has been staged to the planning horizon year 2015.

4.0 ACKNOWLEDGMENTS

Carollo Engineers wishes to acknowledge and thank Mr. Michael Unser, Community Development and Services Director; Mr. Harold Hill, City Engineer; Mr. Baldomero Rodriguez, Principal Civil Engineer and Project Manager; Mr. Michael Reed, Assistant Engineer; Mr. Richard Bartlett, Water Utility Superintendent, and Ron Mauck, Planning Director. Their own and their staff's cooperation and courtesy in obtaining the variety of necessary information were valuable components in completing and producing this report.

5.0 ABBREVIATIONS AND DEFINITIONS

To conserve space and to improve readability, the following abbreviations are used in this report.

ADD	average day demand
ADF	average day flow
AF	acre-feet
CIP	capital improvement program
City	City of Porterville
cfs	cubic feet per second
DI	ductile iron
ENR	Engineering News Records Construction Cost Index
GIS	geographic information system
gpm	gallons per minute
gpd	gallons per day
gpdc	gallons per day per capita
HGL	hydraulic grade line
HP	horsepower
ISO	Insurance Service Office
kWh/AF	kilowatt hours per acre-feet
LF	linear feet
MG	million gallons
MSL	mean sea level
mgd	million gallons per day
PDWF	peak dry weather flow
PWWF	peak wet weather flow
ppb	parts per billion
psi	pounds per square inch
SCADA	supervisory control and data acquisition
SCE	Southern California Edison
SOI	sphere of influence
sq.ft.	square feet
TDH	total dynamic head
UAB	Urban Area Boundary
UDB	Urban Development Boundary
WWTF	Wastewater Treatment Facility

Chapter 2

Chapter 2

PLANNING AREA CHARACTERISTICS

This chapter defines the study area of the master plan, provides a summary of land use categories within the Urban Development Boundary (UDB), presents potential trends for future growth, and lists historical as well as projected population within the UDB. Population projections, as used in this master plan, provide guidance for forecasting sewer flows and for staging future sewer system improvements.

1.0 PLANNING AREA

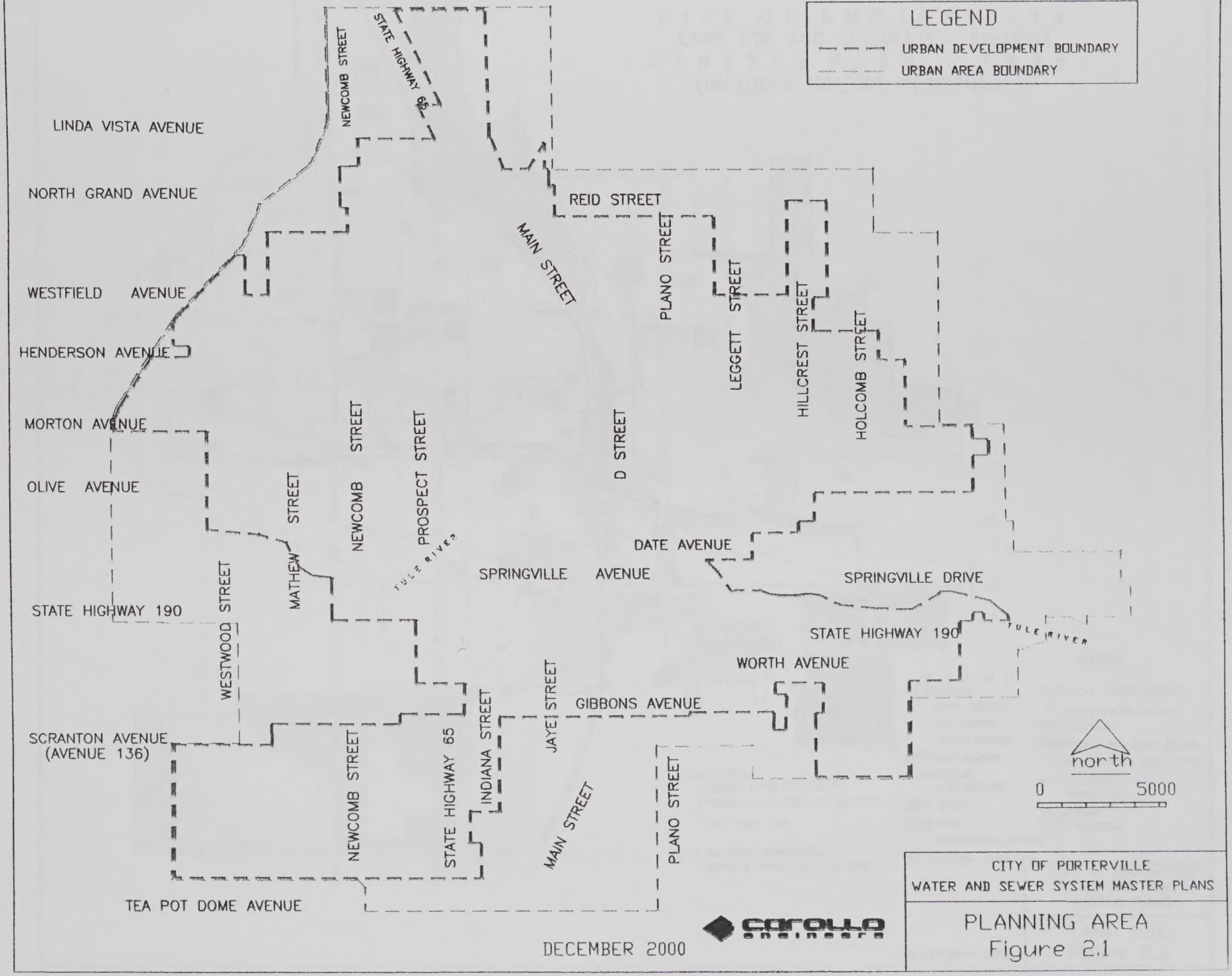
The planning area for this master plan coincides with the City's Urban Development Boundary, as shown on Figure 2.1. The area is generally bounded by W. North Grand Avenue on the north, the Friant-Kern Canal on the northwest, Teapot Dome Avenue and the Porterville Airport on the southwest, Scranton Avenue and the Porterville Development Center on the southeast, and Hillcrest Street and Reid Avenue on the northeast. The planning area also includes a strip of land north of W. North Grand Avenue and east of Highway 65.

The City's location at the base of the Sierra Nevada Foothills results in a more varied topography than is common in most other Valley communities. The elevations of the Valley floor portions of the City planning area ranges between 470 feet above mean sea level (MSL) in the northeast and 420 feet MSL in the northwest. The approximate downward slope, from the eastern area of the City to the western area, is two (2) percent. The northerly and northeastern portions of the planning area, feature rolling and hilly land forms rising to approximately 1,028 feet MSL at Lewis Hills.

The planning area is bisected by Highway 65 in a north-south direction, and by Highway 190 in an east-west direction. The Tule River conveys water from Lake Success, which is located at approximately 2 miles east of the planning area's easterly boundary, and meanders through the City in a westerly direction.

2.0 LAND USE

The land use classifications used in this master plan are consistent with the Land Use, Open Space, and Conservation elements of the General Plan report, dated April 1994 (Figure 2.2). It should be noted that the Hillside Zone Residential Category was added in the 2000 master plan update, in accordance with directions from City Planning staff. In Porterville, the average City-wide residential household population has typically been around 3.0 persons per dwelling unit.


LEGEND
URBAN DEVELOPMENT BOUNDARY
URBAN AREA BOUNDARY
LINDA VISTA AVENUE
NORTH GRAND AVENUE
WESTFIELD AVENUE
HENDERSON AVENUE
MORTON AVENUE
OLIVE AVENUE
STATE HIGHWAY 190
SCRANTON AVENUE
(AVENUE 136)
TEA POT DOME AVENUE
NEWCOMB STREET
STATE HIGHWAY 65
REID STREET
MAIN STREET
PLANO STREET
LEGGETT STREET
HILLCREST STREET
HOLCOMB STREET
D STREET
PROSPECT STREET
MATHEW STREET
WESTWOOD STREET
INDIANA STREET
JAYE STREET
GIBBONS AVENUE
SPRINGVILLE AVENUE
DATE AVENUE
SPRINGVILLE DRIVE
WORTH AVENUE
TULE RIVER
north
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CITY OF PORTERVILLE
WATER AND SEWER SYSTEM MASTER PLANS
PLANNING AREA
Figure 2.1
DECEMBER 2000
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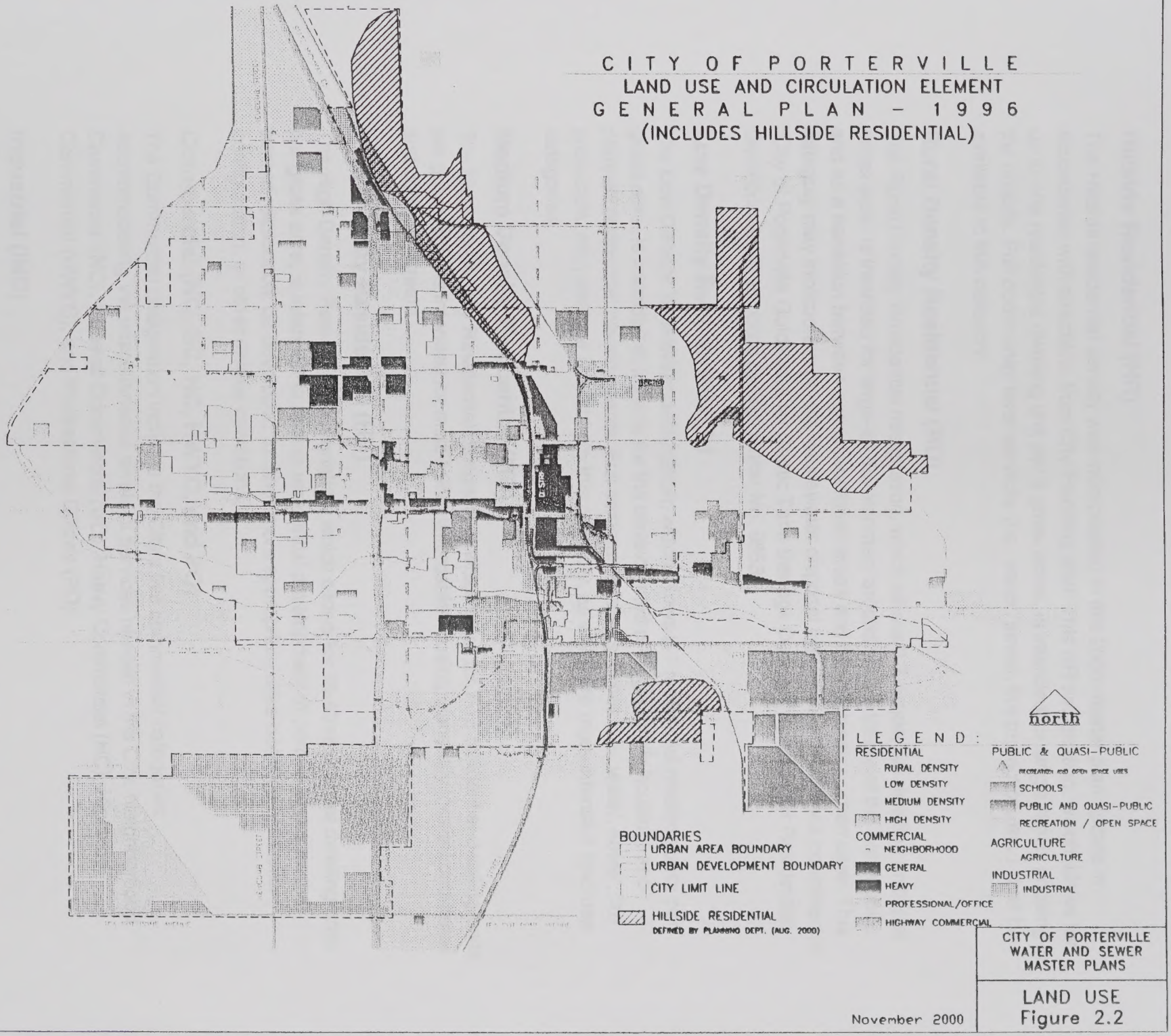

CITY OF PORTERVILLE
LAND USE AND CIRCULATION ELEMENT
GENERAL PLAN - 1996
(INCLUDES HILLSIDE RESIDENTIAL)
north
LEGEND:
RESIDENTIAL
RURAL DENSITY
LOW DENSITY
MEDIUM DENSITY
HIGH DENSITY
COMMERCIAL
NEIGHBORHOOD
GENERAL
HEAVY
PROFESSIONAL/OFFICE
HIGHWAY COMMERCIAL
PUBLIC & QUASI-PUBLIC
RECREATION AND OPEN SPACE USES
SCHOOLS
PUBLIC AND QUASI-PUBLIC
RECREATION / OPEN SPACE
AGRICULTURE
AGRICULTURE
INDUSTRIAL
INDUSTRIAL
BOUNDARIES
URBAN AREA BOUNDARY
URBAN DEVELOPMENT BOUNDARY
CITY LIMIT LINE
HILLSIDE RESIDENTIAL
DEFINED BY PLANNING DEPT. (AUG. 2000)
CITY OF PORTERVILLE
WATER AND SEWER
MASTER PLANS
LAND USE
Figure 2.2
November 2000

Hillside Residential (HR)

The Hillside residential density was incorporated in this 2000 master plan update in accordance with directions from City Planning staff. This HR designation, which allows for up to one residential dwelling unit per 3 gross acres, is intended for single family housing in the hillside. Full community level services (i.e., water, sewer, fire protection, etc.) shall be available to this category.

Rural Density Residential (RD)

The Rural Density Residential designation, which allows 0-2 residential dwelling units per gross acre, is intended for large-lot development around the periphery of the community, and as a transition between agricultural/open areas and more intensive urban uses. This category may incorporate on-site wastewater disposal systems per conditions contained in "City of Porterville Guidelines for Septic Tank Sewage Disposal Systems for Residential Developments", adopted by Resolution No. 9853.

Low Density Residential (LD)

The Low Density Residential designation, which allows 2-7 residential dwelling units per gross acre, is intended to provide for the development of single family housing, and planned residential developments. Full community level services (i.e., water, sewer, fire protection, etc.) shall be available to this category, as well as to more intensive land use categories.

Medium Density Residential (MD)

The Medium Density Residential designation, which allow for 7-15 residential dwelling units per gross acre, is intended for multi-family affordable housing, generally located on arterial and collector streets.

High Density Residential (HD)

The High Density Residential designation, which allows for 15-43 residential dwelling units per gross acre, is intended to enable residential development of parcels and sites that cannot reasonably be developed to other more appropriate uses because of location, configuration, or other unique conditions.

Commercial (NC, GC, HC, HWYC, and PO)

The Commercial designation includes the City's five commercial categories accommodating the miscellaneous levels of services needed in the City: Neighborhood Commercial (NC), General Commercial (GC), Heavy Commercial (HC), Highway Commercial (HWYC), and Professional Offices (PO).

Industrial (IND)

The Industrial designation provides for the development of a variety of manufacturing, assembly, processing, and packaging uses.

Public and Quasi Public (PQ)

The Public and Quasi Public designation accommodates non-recreational government, schools and other public facilities, such as cemeteries, drainage basins and hospitals.

Recreation and Open Space (OS)

The Recreation and Open Space designation includes the City's parks, landscaped and scenic areas, and permanent open space.

Agriculture (AG)

The Agriculture designation is applied within the planning area to sustain agricultural utilization of properties upon which urban development in the foreseeable future is not anticipated.

Special Categories (PAT, SCH)

These designations are specific to this master plan, and are intended to single out either large water/sewer users, or large areas with very low water/sewer usage. These designations include the Porterville Airport (PAT), and lands used for public and private schools (SCH). Water demand and sewer flows from these areas will be modeled based on actual metered data, when available.

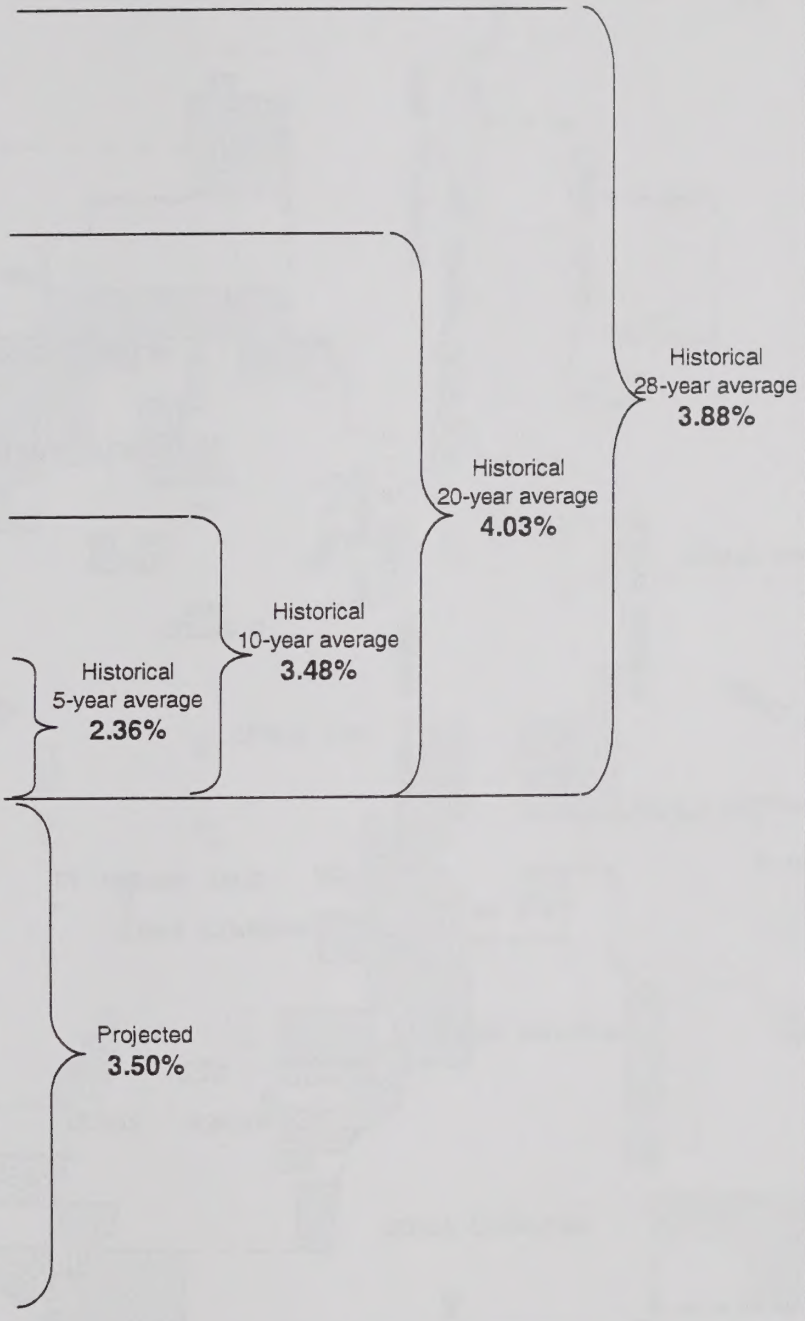
3.0 POPULATION AND STAGED GROWTH

Porterville's historical population figures were obtained from the City records and are presented in Table 2.1. From 1970 to 1996, annual population growth has ranged between a low of 0.40 percent in 1987 to a high of 11.54 percent in 1979, with an average annual growth rate over that 28-year period of 3.88 percent. The last 10-year and 5-year average annual growth rates have dropped to 3.48 percent and 2.36 percent, respectively. Porterville's historical population growth rates are identical to San Joaquin Valley cities' historical growth rates, which typically average at approximately 3.0 percent per year. Population projections presented in the City's 1994 General Plan report reflect the assumption that population increases would occur at a rate of 3.5 percent per year through the year 2010.

The City's planning department provided assistance in developing a 5-year increment staged growth plan through the planning horizon year of 2015 (Figure 2.3). Population projections and staged growth, as used in this master plan, provide guidance for forecasting sewer flows and for staging future sewer system improvements. Should growth trends change in the future, the recommendations of this Master Plan may need to be adjusted accordingly.

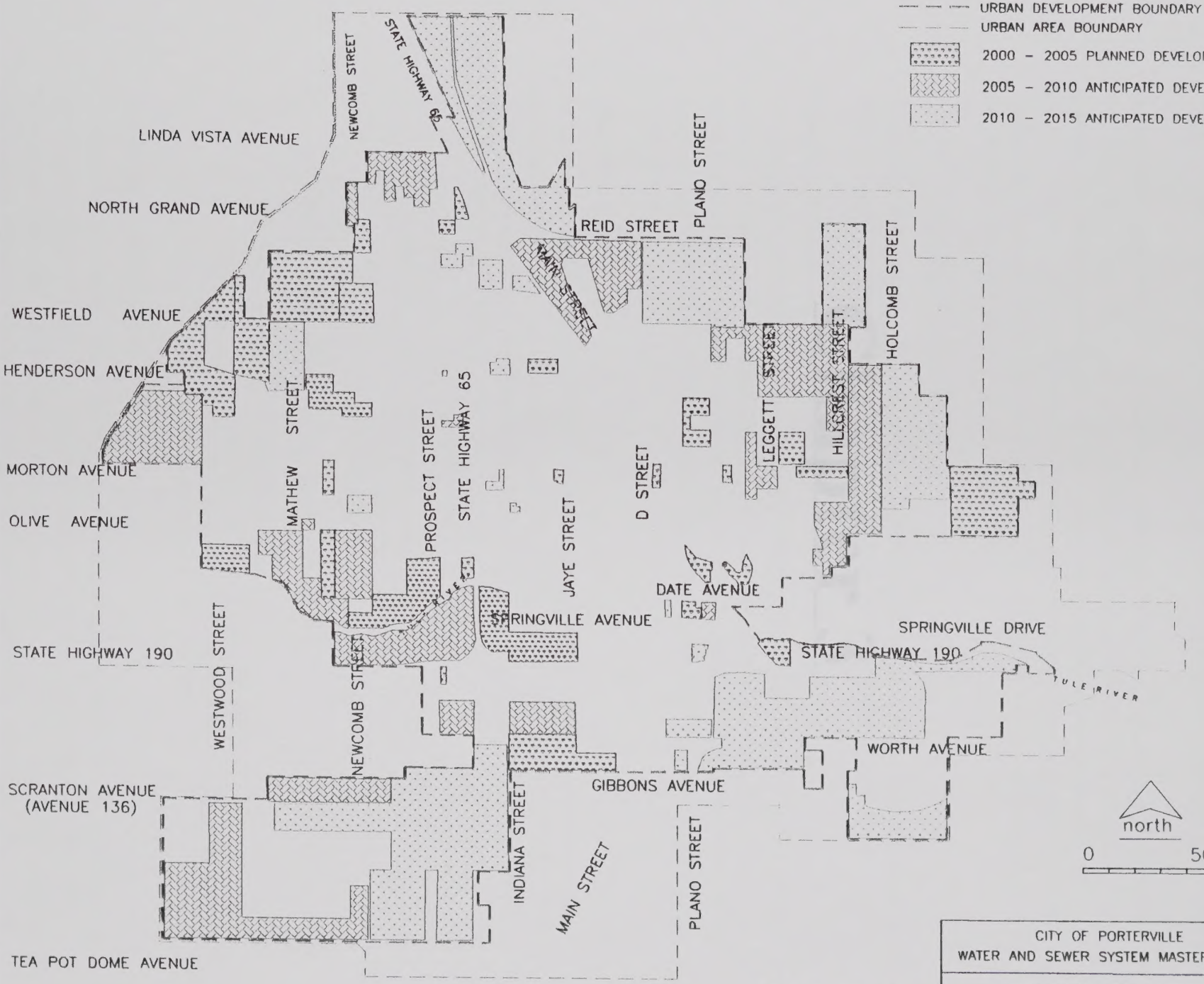
Table 2.1 Historical and Projected Population
City of Porterville Sewer System Master Plan

Year	Population	Annual Growth Rate (percent)
1970	12,602	
1971	12,900	2.36%
1972	13,188	2.23%
1973	13,730	4.11%
1974	14,350	4.52%
1975	14,900	3.83%
1976	15,900	6.71%
1977	16,200	1.89%
1978	16,406	1.27%
1979	18,300	11.54%
1980	19,707	7.69%
1981	20,793	5.51%
1982	21,895	5.30%
1983	22,611	3.27%
1984	23,271	2.92%
1985	24,002	3.14%
1986	24,516	2.14%
1987	24,614	0.40%
1988	25,071	1.86%
1989	26,981	7.62%
1990	28,839	6.89%
1991	30,380	5.34%
1992	31,547	3.84%
1993	32,840	4.10%
1994	33,803	2.93%
1995	33,636	-0.49%
1996	34,581	2.81%
1997	35,428	2.45%
1998	36,668	3.50%
1999	37,951	3.50%
2000	39,280	3.50%
2001	40,654	3.50%
2002	42,077	3.50%
2003	43,550	3.50%
2004	45,074	3.50%
2005	46,652	3.50%
2006	48,285	3.50%
2007	49,975	3.50%
2008	51,724	3.50%
2009	53,534	3.50%
2010	55,408	3.50%
2011	57,347	3.50%
2012	59,354	3.50%
2013	61,432	3.50%
2014	63,582	3.50%
2015	65,807	3.50%



Sources:

1. 1970 to 1990 population: Federal Census of Housing and Population.
2. 1991 to 1997 population: State of California Department of Finance, Population Research Unit.
3. 1998 to 2015 population: projected at an annual growth rate of 3.5%, in accordance with the General Plan.


LEGEND
URBAN DEVELOPMENT BOUNDARY
URBAN AREA BOUNDARY
2000 - 2005 PLANNED DEVELOPMENT
2005 - 2010 ANTICIPATED DEVELOPMENT
2010 - 2015 ANTICIPATED DEVELOPMENT
LINDA VISTA AVENUE
NORTH GRAND AVENUE
WESTFIELD AVENUE
HENDERSON AVENUE
MORTON AVENUE
OLIVE AVENUE
STATE HIGHWAY 190
SCRANTON AVENUE
(AVENUE 136)
TEA POT DOME AVENUE
NEWCOMB STREET
STATE HIGHWAY 65
REID STREET
PLANO STREET
MAIN STREET
HOLCOMB STREET
HILLCREST STREET
LEGGETT STREET
D STREET
JAYE STREET
PROSPECT STREET
MATHEW STREET
WESTWOOD STREET
SPRINGVILLE AVENUE
DATE AVENUE
SPRINGVILLE DRIVE
TULE RIVER
WORTH AVENUE
GIBBONS AVENUE
INDIANA STREET
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0
5000
CITY OF PORTERVILLE
WATER AND SEWER SYSTEM MASTER PLANS
STAGED GROWTH
Figure 2.3
November 2000

Chapter 3

Chapter 3

PLANNING AND DESIGN CRITERIA

Porterville's sewer system was evaluated based on the analysis and design criteria defined in this chapter. Historical flows at the wastewater treatment facility were reviewed and analyzed to determine daily, monthly and seasonal fluctuations experienced by the Porterville sewer system. The developed criteria addresses the sewer system capacity, acceptable pipe gravity slopes, acceptable depths of flow within pipes, average sewer flow coefficients, and daily and hourly peaking factors.

1.0 DESIGN CAPACITIES

Capacities of the existing sanitary sewer collection system consisting of gravity pipes, force mains, and pump stations, are calculated based on the criteria described below.

Gravity Sewers

The hydraulic criteria used for designing the proposed gravity sewers will have a greater factor of safety than the hydraulic analysis criteria used to model the existing system. The proposed difference between the design criteria and the analysis criteria will allow taking maximum advantage of the existing sewer capacities and preventing unnecessary pipe replacements.

Pipe Capacities

Sewer pipe capacities are dependent on many factors. These include roughness of the pipe, the chosen maximum allowable depth of flow, and limiting velocity and slope. The Continuity equation and the Manning equation for steady-state flow are used for gravity sewer hydraulic calculations:

Continuity Equation: $Q = V A$

Where:
- Q = peak flow, cfs
- V = velocity, fps
- A = cross-sectional area of pipe, sq. ft.

Manning Equation: $V = \frac{1.49}{n} R^{2/3} S^{1/2}$

Where:
- V = velocity, fps
- n = Manning's coefficient of friction
- R = hydraulic radius (area divided by wetted perimeter), ft
- S = slope of pipe, feet per foot

Manning Coefficient (n)

The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of joints, root intrusion, and other factors. For sewer pipes, the Manning Coefficient typically ranges between 0.011 and 0.017, with 0.013 being a representative value used for system master planning purposes.

Flow Depth Criteria (d/D)

When designing sewer pipelines, it is common practice to adopt variable flow depth criteria for various pipe sizes. This criteria is expressed as a maximum depth of flow to pipe diameter ratio (d/D). Design d/D ratios typically range from 0.5 to 1.0, with the lower values typically used for smaller pipes - which may experience flow peaks greater than planned or may experience blockages from debris, paper, or rags.

The City of Porterville's Engineering Design Standards, as well as the previous 1989 Sewer System Master Plan, recommend a design flow criteria for pipes based on a d/D ratio of 0.75. The design flow criteria established for the Porterville sewer model already provide sufficient degree of conservatism, and utilizing a d/D ratio of 0.75 for analyzing the existing trunk system may lead to premature or unnecessary replacement of existing pipelines. Therefore, a d/D ratio of 0.9 was used to evaluate Porterville's existing trunk system, while a d/D ratio of 0.75 was used for designing the future trunk system.

In order to minimize the settlement of sewage solids, it is standard practice in the design of gravity sewers to specify that a minimum velocity of 2 feet per second (fps) be maintained when the pipeline is half-full. At this velocity, the sewer flow will typically provide self-cleaning for the pipe. Due to hydraulics of a circular conduit, velocity of half-full flow in pipes approaches the velocity of nearly full flow in pipes. Table 3.1 lists the minimum slopes for maintaining self-cleaning full flow velocities. It does not list slopes less than 0.0008, which is the minimum practical slope for gravity sewer in construction. It should be noted that greater slopes are desirable if they are compatible with existing topography, though not to exceed a velocity of 10 fps.

Changes in Pipe Size

When a smaller sewer joins a large one, the invert of the larger sewer will be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation. For master planning purposes, and in the absence of field data, sewer crowns will be matched at the manholes.

Table 3.1 Recommended Minimum Slopes for Circular Pipes
City of Porterville Sewer System Master Plan

Pipe Size (inches)	d/D = 0.50			d/D = 0.75		
	Preferred Slope[1]	Pipe Capacity		Minimum Slope[2]	Pipe Capacity	
	(ft/ft)	(mgd)	(cfs)	(ft/ft)	(mgd)	(cfs)
6	0.0049	0.13	0.20	0.0038	0.20	0.31
8	0.0033	0.22	0.35	0.0026	0.36	0.55
10	0.0025	0.35	0.55	0.0019	0.56	0.87
12	0.0019	0.50	0.78	0.0015	0.79	1.23
15	0.0015	0.81	1.25	0.0011	1.28	1.98
18	0.0011	1.13	1.74	0.0009	1.78	2.75
21	0.0009	1.54	2.38	0.0007	2.43	3.76
24	0.0008	2.07	3.20	0.0006	3.27	5.05
27	0.0007	2.65	4.10	0.0005	4.18	6.47
30	0.0006	3.25	5.02	0.0004	5.13	7.94
33	0.0005	3.82	5.91	0.0004	6.04	9.34
36	0.0005	4.82	7.46	0.0003	7.61	11.78
42	0.0004	6.50	10.06	0.0003	10.27	15.90

Notes:

1. Preferred slopes (Manning's formula) are desirable for maintaining self cleaning velocities of 2 fps, when the pipe is half-full.
2. Minimum slopes (Manning's formula) are calculated based on maintaining velocities of 2 fps when pipes are three-quarters full.
3. Approval by the City Engineer is required if:
   a. Designed slopes are flatter than the minimum slopes.
   b. Designed slopes are flatter than the practical slope of 0.0008,

Pump Stations

Multiple pumps are recommended at pump stations, and equal size pumps are needed when only two units are provided. Capacities of pumps were evaluated to provide a pump station capability, with the largest pump out of service, to handle the peak hour design flow rates.

Normal Operation

The design fill time, based on average flows, and minimum pump cycle time, are usually considered in sizing the pump station wet well. The effective volume of the wet well shall provide a holding period not to exceed thirty (30) minutes for the design average flow. When selecting the minimum cycle time, the pump manufacturer's duty cycle recommendations shall be utilized. Start and stop times higher than seven (7) times an hour for any one pump are not recommended.

Emergency Operation

The objective of emergency operation is to protect public health by preventing back-up of wastewater and subsequent discharge to waterways, streets, and other public and private property. Emergency pumping capability may be accomplished by the provision of portable or in-place emergency generators. The generator should have the capacity to start up and maintain the total rated running capacity of the station.

While many San Joaquin Valley cities utilize the volume of the gravity collection system for emergency storage of wastewater, some are in the process of installing emergency generator hookups at each pump/lift station. The hookup will allow the use of a generator for both localized and City-wide emergencies.

Many of Porterville's older pump/lift stations include an upstream interceptor sewer "approach sewer", with up to 72 inches in diameters and up to 350 feet in length, to account for emergency storage. As an example, the Mathew Street Lift Sation, located at the southwest corner of the intersection with Mulberry Avenue, includes a 310 feet of 36-inch sewer pipe to account for emergency storage. Upstream of the 36-inch storage pipe, the sewer flows on Mathew Street are handled by a 12-inch trunk sewer. According to City staff, the City's policy requires an approach sewer to account for three (3) hours of holding capacity.

Using an approach sewer to account for holding capacity may require additional maintenance tasks but it mitigates the need for a permanent generator. Smaller pipes entering the approach (storage) sewer pipe should enter below the water setting of the pump to mitigate potential odors resulting from the drop in elevation between the smaller carrier pipe and the larger holding pipe. Also, the entire pump/lift station elevation is lowered to receive gravity flows from the larger holding pipe, which has been dropped to match the top elevation of the smaller carrier pipe.

In lieu of constructing approach sewers to provide emergency storage, it is recommended that Porterville installs permanent generators in strategic locations at the larger stations (usually greater than 1 mgd).

Force Mains

The current City standards dictate a minimum force main diameter of six (6) inches for raw wastewater. The minimum and maximum recommended velocities are 2.0 and 6.5 fps, respectively. The Hazen-Williams formula is commonly used for the design of force mains. The velocity equation is:

$$V=1.32CR^{0.63}S^{0.54}$$

Where:
V = mean velocity, fps
C = roughness coefficient
R = hydraulic radius, ft
S = slope of the energy grade line, ft/ft

The value of the Hazen-Williams 'C' varies with the type of pipe material and is influenced by the type of construction and age of the pipe. A 'C' value of 120 was used for the pipes evaluated in this master plan.

2.0 DESIGN FLOWS

The sewer design flow criteria for Porterville was established based on a review of historical flows, as measured and recorded at the wastewater treatment facility (WWTF), supplemented with a flow monitoring program performed with this master plan.

Wastewater Flow Components

Wastewater flows consist of sanitary flow from City residential, commercial, and industrial users, termed base wastewater flow (BWF), plus extraneous groundwater and storm water, termed infiltration/inflow (I/I), that may enter the sewers through pipe and manhole defects or direct drainage connections. BWF generally follow a consistent diurnal pattern, with the peak flow typically occurring in the early to mid-morning hours. I/I flows are dependent upon groundwater levels and rainfall patterns. Peak I/I flows occur during major rainstorms and are related to the intensity and duration of rainfall.

Groundwater infiltration may occur throughout the year, although groundwater infiltration rates are typically higher in the late winter and early spring. Dry weather groundwater infiltration (or base infiltration) cannot easily be separated from BWF by flow measurement techniques. Therefore, the combination of BWF plus base infiltration is typically considered a single wastewater component, termed the Average Day Flow (ADF). The peak dry weather flow (PDWF) is defined as the maximum hourly dry weather flow, and the peak wet weather flow (PWWF) is the peak flow, including I/I, that would be expected during a major storm event. For sewer system master planning, design flows are developed by applying design flow criteria to land use and population data in order to define average and peak

flow conditions. The design flow criteria are typically based on standard practice values, but are refined based on actual flow data from Porterville.

Wastewater Treatment Facility Flows

As an initial step in establishing the wastewater flow criteria for Porterville, historical flow data influent to the Wastewater Treatment Facility (WWTF) were collected for the past three years. Monthly historical flows at the WWTF influent line, between January 1995 and February 1998, were extracted from the City's WWTF monthly monitoring program records, and are summarized in Table 3.2 and plotted on Figure 3.1.

Table 3.2 lists, for each month, the minimum day flow (lowest flow recorded during any single day of the month), the average day flow for each month, the maximum day flow (highest flow recorded during any single day of the month), and the peak hour flow (highest hour flow). Maximum day peaking factors were calculated by dividing the maximum day flows by the average flow for that year. Similarly, peak hour factors were calculated by dividing the peak hour flows by the average flow for that year.

Historical monthly rainfall information for the City of Porterville was obtained from the California Department of Water Resources. Table 3.3 lists the average monthly rainfall for the period between 1931 and 1995, indicating the wet weather months between October and May, while the dry weather months are between June and September. The 64-year annual average for the City of Porterville has been 11.1 inches. No rainfall information was available for the most recent years, 1996 and 1997. Both years are considered above-average, and would thus result in slight increases to the over average rainfall.

Maximum dry and wet weather flows, measured at the WWTF between January 1995 and February 1998, are summarized in Table 3.4. The highest maximum day at the WWTF occurred in June 1996, with a flow that is 1.33 times higher than that year's average annual flow. In that same year, the maximum day during the wet weather season was 1.29 times higher than the 1996 average annual flows. The highest recorded hourly flow at the WWTF in 1996 occurred during the wet weather season (November 1996), with a flow that is 2.38 times higher than that year's average annual flow. The highest recorded hourly flow at the WWTF in 1997 also occurred during the wet weather season of that year. Figure 3.2 shows the highest hourly peaking factor, at the WWTF, during January 1995 and February 1998. High peak hourly flows occurring during winter months indicate the likely presence of infiltration flows leaking into the sewer system during storm events.

Table 3.2 Historical Monthly Sewer Inflows at WWTF (1995-1998)
City of Porterville Sewer System Master Plan

Month-Year	Minimum Day (mgd)	Average Day (mgd)	Maximum Day (mgd)	Peak Hour (mgd)	MaxDay / AvgDay Factor	PeakHour / AvgDay Factor
Jan-95	3.48	4.51	5.17	8.00	1.20	1.86
Feb-95	3.70	4.12	4.56	7.00	1.06	1.63
Mar-95	3.75	4.45	5.72	6.50	1.33	1.51
Apr-95	3.11	4.15	5.14	6.40	1.20	1.49
May-95	3.69	4.33	5.40	9.70	1.26	2.26
Jun-95	4.15	4.48	5.13	8.90	1.20	2.07
Jul-95	4.27	4.81	5.19	8.00	1.21	1.86
Aug-95	4.58	4.84	5.35	9.70	1.25	2.26
Sep-95	3.90	4.35	5.01	9.70	1.17	2.26
Oct-95	3.76	4.01	4.31	6.00	1.00	1.40
Nov-95	3.59	3.82	4.04	6.60	0.94	1.54
Dec-95	3.34	3.66	5.08	5.80	1.18	1.35
Jan-96	3.43	3.82	5.01	6.30	1.19	1.50
Feb-96	3.47	3.93	4.42	6.20	1.06	1.48
Mar-96	3.70	3.94	4.16	5.80	0.99	1.38
Apr-96	3.77	4.15	5.03	6.80	1.20	1.62
May-96	3.92	4.22	4.98	6.40	1.19	1.53
Jun-96	4.07	4.34	5.57	8.70	1.33	2.07
Jul-96	4.07	4.47	4.88	7.00	1.16	1.67
Aug-96	4.33	4.60	4.89	6.80	1.17	1.62
Sep-96	4.11	4.41	4.80	7.50	1.15	1.79
Oct-96	3.83	4.19	4.74	7.90	1.13	1.88
Nov-96	3.66	4.03	5.39	10.00	1.29	2.38
Dec-96	3.76	4.22	4.74	7.40	1.13	1.76
Jan-97	4.26	4.61	5.41	9.50	1.12	1.97
Feb-97	4.37	4.61	5.04	8.00	1.05	1.66
Mar-97	4.51	4.74	5.07	9.70	1.05	2.01
Apr-97	4.54	4.81	5.07	7.50	1.05	1.56
May-97	4.68	5.06	5.33	7.80	1.11	1.62
Jun-97	4.82	5.14	5.38	7.20	1.12	1.49
Jul-97	4.98	5.24	5.46	7.50	1.13	1.56
Aug-97	5.11	5.32	5.64	7.60	1.17	1.58
Sep-97	4.92	5.17	5.56	9.80	1.15	2.03
Oct-97	4.45	4.86	5.17	9.60	1.07	1.99
Nov-97	3.91	4.26	4.98	9.90	1.03	2.06
Dec-97	3.55	3.97	4.41	8.90	0.92	1.85
Jan-98	3.78	4.07	4.65	8.80	0.97	1.83
Feb-98	4.17	4.60	5.73	9.60	1.19	1.99

Source: City of Porterville Wastewater Treatment Facility, Monthly Monitoring Program.

Figure 3.1 Historical Monthly Sewer Inflows at WWTF (1995-1998)
City of Porterville Sewer System Master Plan

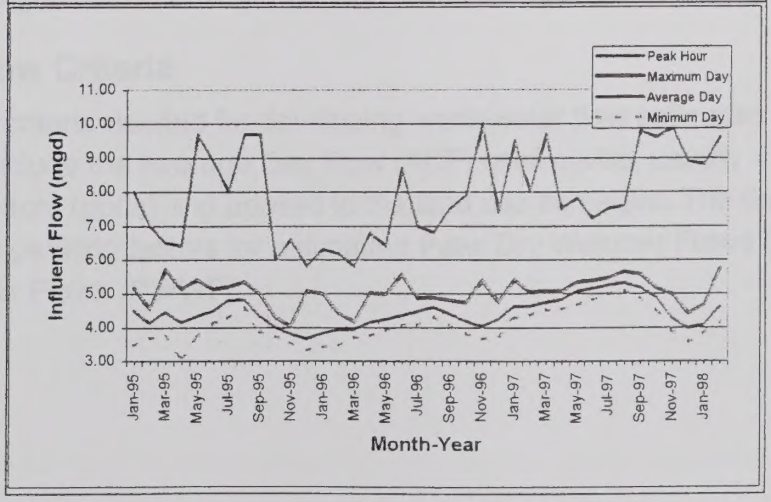


Table 3.3 64-Year Average Monthly Rainfall (1931 to 1995) City of Porterville Sewer System Master Plan													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	51.9	46.8	51.4	28.0	10.0	2.2	0.3	0.4	5.6	14.0	29.2	42.3	283
Inches	2.0	1.8	2.0	1.1	0.4	0.1	0.0	0.0	0.2	0.6	1.1	1.7	11.1
Source: Department of Water Resources, California Data Exchange Center.													

Flow Monitoring Program

A temporary flow monitoring program was conducted to assist in the development of the design flow criteria. The primary purpose of the program was measurement of flow and the determination of relative flow from different areas of the sewer system. The program consisted of installing twelve (12) flow meters for seven (7) days, at major sewer trunks, between February 5, 1998 and February 11, 1998. The selected monitoring sites are described in Table 3.5 and graphically shown on a schematic of the sewer system on Figure 3.3. Table 3.6 lists a daily summary for each monitored site, including the average and maximum instantaneous flows for each day. More detailed flow monitoring data is included in the Appendix.

Rainfall information during the temporary flow monitoring period was extracted from the web site of the California Department of Water Resources (DWR), Data Exchange Center, which lists hourly and daily rainfall measurements at Success Dam, as shown in the Appendix. According to the DWR hourly rainfall information, the total measured rainfall during the flow monitoring period was 0.86 inches, most of which occurred on February 6 and 7, 1998.

The rains measured during the flow monitoring period do not constitute a significant storm event, and the diurnal flow pattern over the seven day period, shown on Figure 3.4, indicate no significant impact on the sewer system caused by the measured rainfalls.

Design Flow Criteria

Design flow criteria needed for developing wastewater flow estimates in the City of Porterville include the Average Day Flow (ADF) coefficients, usually expressed in gallons per day per acre (gpda) and applied to the land use acreages. The design flow criteria also includes the peaking factors for estimating Peak Dry Weather Flows (PDWF) and Peak Wet Weather Flows (PWWF).

Table 3.4 Wet/Dry Weather Peaking Factors at WWTF (1995-1998)
City of Porterville Sewer System Master Plan

Maximum Dry and Wet Weather Monthly Summaries

Year	Average Day (mgd)	Wet Max Month (mgd)	Dry Max Month (mgd)	Wet Max Month Factor	Dry Max Month Factor
1995	4.29	4.510	4.84	1.05	1.13
1996	4.19	4.220	4.60	1.01	1.10
1997	4.82	4.740	5.32	0.98	1.10

Maximum Dry and Wet Weather Daily Summaries

Year	Average Day (mgd)	Wet Max Day (mgd)	Dry Max Day (mgd)	Wet Max Day Factor	Dry Max Day Factor
1995	4.29	5.17	5.35	1.20	1.25
1996	4.19	5.39	5.57	1.29	1.33
1997	4.82	5.41	5.64	1.12	1.17

Peak Dry and Wet Weather Hourly Summaries

Year	Average Day (mgd)	Wet Peak Hour (mgd)	Dry Peak Hour (mgd)	Wet Peak Hour Factor	Dry Peak Hour Factor
1995	4.29	8.00	9.70	1.86	2.26
1996	4.19	10.00	8.70	2.38	2.07
1997	4.82	9.90	9.80	2.06	2.03

Source: City of Porterville Wastewater Treatment Facility, Monthly Monitoring Program.

Figure 3.2 Peak Hour Factors at WWTF (1995-1998)
City of Porterville Sewer System Master Plan

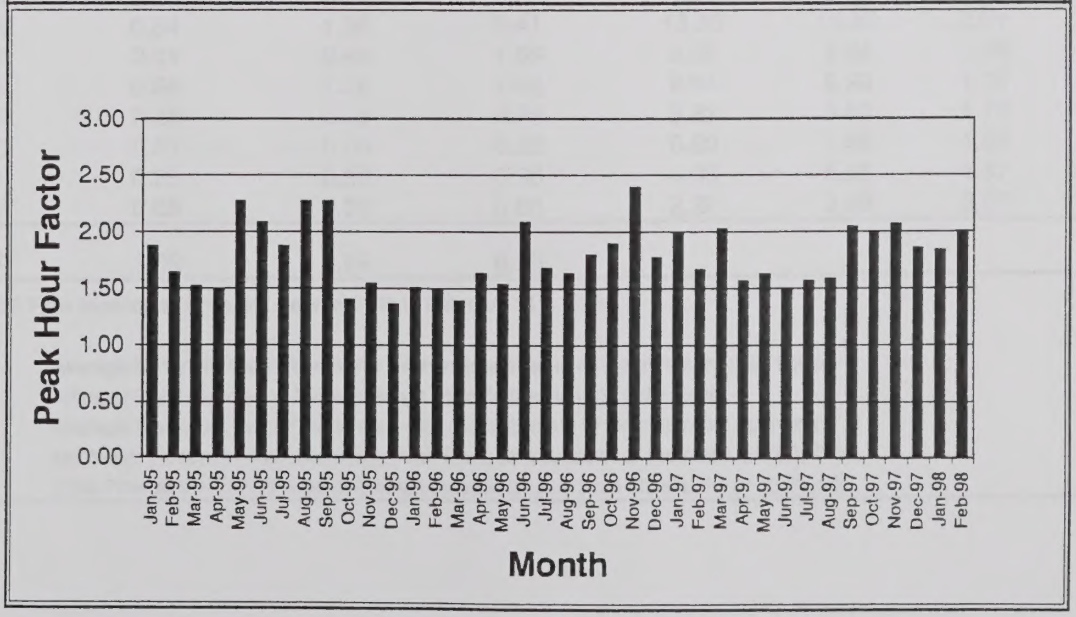


Table 3.5 Temporary Flow Monitoring Program - Site Descriptions
City of Porterville Sewer System Master Plan

Site No.	Street	ation Description	Pipe Size (inches)
PV-01	Newcomb St.	n/o intersection with Henderson Ave.	27
PV-02	Henderson Ave.	w/o intersection with Newcomb St.	12
PV-03	Porter Rd.	n/o intersection with Grand Avenue	15
PV-04	Grand Ave.	e/o intersection with Porter Rd.	18
PV-05	Morton Ave.	e/o intersection with Prospect St.	18
PV-06	Newcomb St.	at intersection with Thurman Ave.	27
PV-07	Newcomb St.	at intersection with Clare Ave.	36
PV-08	Olive Ave.	at intersection with Cottage St.	21
PV-09	Cottage St.	s/o intersection with Olive Ave.	18
PV-10	Indiana St.	s/o intersection with Olive Ave.	21
PV-11	Date St.	e/o intersection with Kessing St.	21
PV-12	Jaye St.	at intersection with Springville Ave.	18

Table 3.6 Temporary Flow Monitoring Program - Instantaneous Flows
City of Porterville Sewer System Master Plan

Site	Avg. Minimum Daily Flow[1] (mgd)	Average Daily Flow[2] (mgd)	Avg. Maximum Daily Flow[3] (mgd)	7-day Flow (mg/week)	Average Depth (in)	Average Velocity (fps)	Inst. Peak to Average Factor[4]
PV-01	0.01	0.24	0.84	1.70	2.26	1.83	3.46
PV-02	0.01	0.11	0.36	0.76	2.71	1.03	3.31
PV-03	0.01	0.25	0.60	1.76	5.21	0.91	2.37
PV-04	0.15	0.50	0.83	3.50	5.60	1.60	1.65
PV-05	0.28	0.61	0.87	4.24	5.85	1.82	1.44
PV-06	0.64	1.98	3.41	13.83	10.62	2.01	1.72
PV-07	0.01	0.44	1.59	3.05	3.92	1.29	3.64
PV-08	0.56	1.26	1.82	8.84	8.99	1.76	1.44
PV-09	0.28	0.55	0.78	3.82	5.56	1.79	1.42
PV-10	0.01	0.09	0.22	0.60	1.66	1.28	2.55
PV-11	0.25	0.58	0.96	4.06	6.55	1.37	1.66
PV-12	0.09	0.32	0.60	2.22	3.69	2.27	1.89
WWTF[5]	1.09	3.69	6.90				

Source: ADS Flow Monitoring Program, February 5th to February 11th, 1998.

Notes:

1 Average Minimum Daily Flow is the 7-day average value of the minimum daily flows
2 Average Daily Flow is the 7-day average value of the average daily flows
3 Average Maximum Daily Flow is the 7-day average value of the maximum daily flows
4 Maximum Recorded Instantaneous Peak Flow, as a function of the Average Daily Flow
5 Total Flow at the WWTF was calculated by adding flows from Meters PV-01 to PV-06

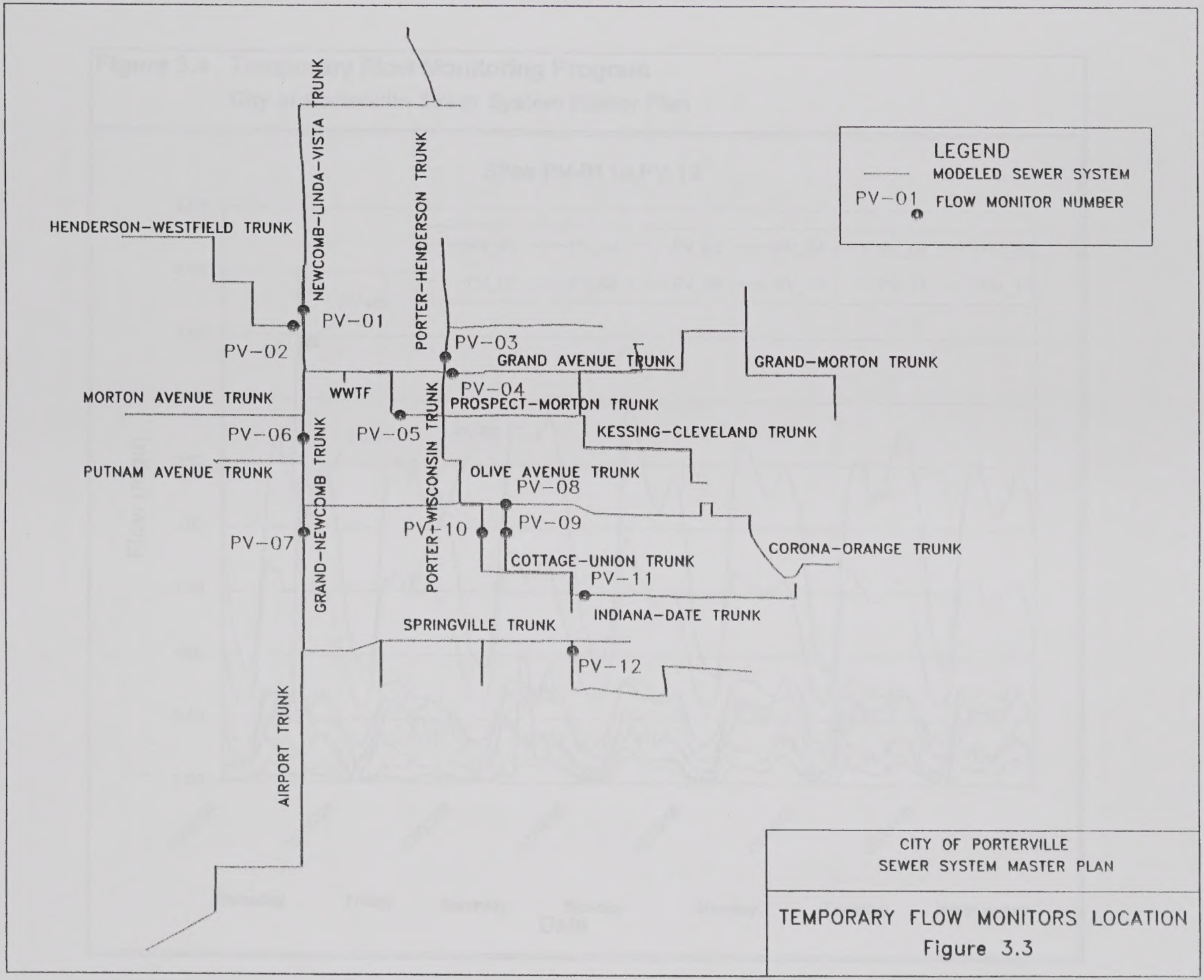
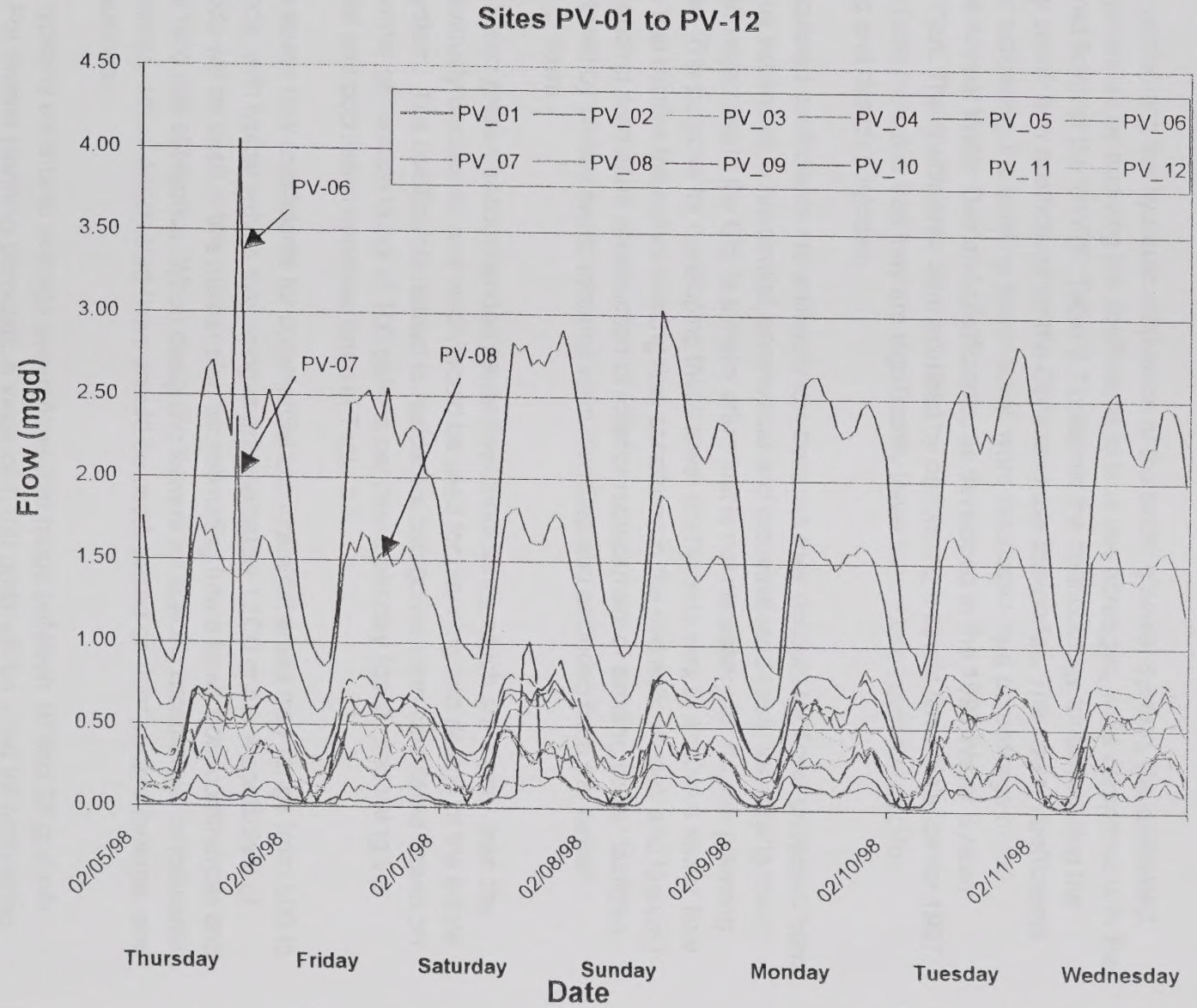

LEGEND
MODELED SEWER SYSTEM
PV-01 FLOW MONITOR NUMBER
NEWCOMB-LINDA-VISTA TRUNK
PORTER-HENDERSON TRUNK
HENDERSON-WESTFIELD TRUNK
PV-01
PV-02
PV-03
GRAND AVENUE TRUNK
GRAND-MORTON TRUNK
WWTF
PV-04
MORTON AVENUE TRUNK
PROSPECT-MORTON TRUNK
PV-06
PV-05
KESSING-CLEVELAND TRUNK
PUTNAM AVENUE TRUNK
OLIVE AVENUE TRUNK
PV-08
PV-10
PV-09
PV-07
CORONA-ORANGE TRUNK
COTTAGE-UNION TRUNK
PV-11
INDIANA-DATE TRUNK
SPRINGVILLE TRUNK
PV-12
AIRPORT TRUNK
GRAND-NEWCOMB TRUNK
PORTER-WISCONSIN TRUNK
CITY OF PORTERVILLE
SEWER SYSTEM MASTER PLAN
TEMPORARY FLOW MONITORS LOCATION
Figure 3.3

Figure 3.4 Temporary Flow Monitoring Program
City of Porterville Sewer System Master Plan



Average Sewer Flow Coefficients.
In estimating the average day flows (ADF) in the hydraulic model, it is essential to develop accurate average sewer flow coefficients. These coefficients, usually expressed in gallons per day per acre (gpda), are based on land use categories and are applied to the developed acreages to generate the hydraulic model flows.

Prior to performing the hydraulic evaluation of the existing sewer system, the estimated flows, generated by applying the coefficients to land use acreages, were compared with the measured flows at the WWTF. Table 3.7 presents the methodology for developing the average sewer flow coefficients for the City's land use categories. The sewer coefficients used for estimating the existing sewer flows, were calculated as a percentage of the Average Annual Water Demand coefficients, as developed in the 1998 Water System Master Plan. The coefficients were adjusted by performing a sewer flows balance for 1997, and the table indicates that they are significantly lower than those typically used for planning and design purposes.

The calculated coefficients are artificially low because they account for flows projected from numerous vacancies in residential, commercial and industrial land uses. Identifying these scattered vacancies in the City is a major effort that is not necessary for master planning purposes. The purpose for developing these lower coefficients was to ensure a sewer flow balance that mimics the actual existing flow conditions in the hydraulic model, and to avoid recommending premature construction of relief or replacement of existing sewer facilities. Areas served by on-site septic systems were identified and excluded from the sewer balance of flows.

Table 3.7 also present recommended sewer flow coefficients, which are higher than the ones previously discussed, and which would be used for planning and design of the future sewer system. The coefficients related to residential categories were calculated based on a wastewater generation factor of 100 gallons per capita per day (gpcd) and using the residential and population densities listed in Table 3.7.

Average sewer flow coefficients for commercial and industrial areas may range from 500 to 2,500 gpda, with typical values averaging at approximately 1,000 gpda. A coefficient of 1,000 gpda will be used in this master plan for estimating future flows from commercial and industrial land use categories. When designing sewers for specific commercial or industrial developments, actual anticipated flows should be used, based on floor square footage, and type of business.

Schools typically contribute average sewer flows that range between 10 and 25 gpd per student. For master planning purposes, a value of 1,100 gpda will be used for estimating flows from future schools. Land uses designated as open space or agricultural are assumed to generate negligible amounts of sewage flow.

Table 3.7 Average Sewer Flow Coefficients

City of Porterville Sewer System Master Plan

Land Use Category[1]	Land Use Code	UDB[1] (acres)	Existing Sewer Service Area[2] (acres)	(%)	Water Demand Coefficient[3] (gpd/acre)	Sewer Flow Coefficient[4] (gpd/acre)	1997 Sewer ADWF Balance[5] (gpd)	Recommended Sewer Flow Coefficient[6] (gpd/acre)
Hillside Density Resident	Note 7					n/a		300
Rural Density Residentia	RD	540	0	0%	720	468	0	400
Low Density Residential	LD	6,931	2,200	46%	1,584	1,030	2,265,120	1,240
Medium Density Resider	MD	823	250	5%	3,168	2,059	514,800	2,750
High Density Residential	HD	433	250	5%	4,608	2,995	748,800	4,250
Commercial	GC,HC, HWYC, PO	1,253	590	12%	1,440	936	552,240	1,000
Industrial	IND	868	290	6%	1,440	936	271,440	1,000
Public/Quasi Public	PQ	1,097	306	6%	720	468	143,208	500
Open Space	OS	584	98	2%	288	187	18,346	
Agriculture	AG	137	137	3%	0	0	0	
Airport	PAT	333	333	7%	72	47	15,584	
Schools	SCH	351	300	6%	1,728	1,123	336,960	1,100
Totals		13,350	4,754	100%			**4,866,498**	

Notes:

1. Urban Development Boundary, per the City of Porterville's Land Use Element of the General Plan.
2. Existing Serviced Acreage. The percent was calculated by dividing the land use Serviced Acreage by the total Serviced Acreage.
3. Average Annual Water Demand Coefficients, developed in the 1998 Water System Master Plan
4. Average Sewer Flow Coefficients, based on 65% of the Average Water Demand Coefficients, and used for balancing the existing model sewer flows.
5. Porterville's average sewer flow for 1997, as metered at the wastewater treatment facility, was 4.82 million gallons per day (mgd)
6. Recommended Average Sewer Flow Coefficients for use on future developments:
   For Residential Categories, the coefficients are calculated based on 100 gallons per day per capita (gpdc)
   For Commercial and Industrial Categories, the coefficients are based on typical values of 1,000 gallons per day per acre (gpda)
   In the case of future large commercial developments or industries, flows should be based on actual projected flows.
7. In accordance with on-going proposed Land Use modifications, The Hillside Residential Density will include a conversion of approximately 200 acres of Rural Density in the South, 800 acres of Low Density Residential in the east, and 400 acres of Low Density Residential in the north. For a total of 1,400 acres.

Last Revised: January 2001

Sewer Peaking Factors.
Peaking factors represent the increase in sewer flows experienced above the ADF. The various peaking conditions are statistical concepts or numerical values obtained from a review of historical data and, at times, tempered by engineering judgement.

Peaking conditions that are of particular significance to hydraulic analysis of the sewer system include the peak dry weather flows (PDWF), and the peak wet weather flows (PWWF). An alternative method for calculating the total PWWF includes developing the criteria for infiltration and inflow (I/I) rates to be added to the average dry weather flow (ADWF). Development of I/I rates requires an extensive wet weather flow monitoring program, which is usually initiated based on suspected significant I/I. City staff have indicated that groundwater infiltration in Porterville is not significant due to the low groundwater table, and inflow into the sewer system, during storm events, does not seem to be a City-wide problem. The older portion of the sewer system, such as the sewers tributary to either the Grand Avenue Trunk or the Olive Avenue Trunk, might have high rates of I/I contributions during wet weather periods. As the City expands, and as new major trunks are constructed, the relative amount of I/I is are expected to decrease, and may be negligible in the newer portion of the system that serve predominantly new developments.

During significant storm events, other sewer systems experience wet weather peaking factors that are 5 to 10 times higher than the ADF. The City of Porterville, like most San Joaquin Valley cities, does not experience very high peak wet weather flows. According to the DWR rainfall records, Porterville's 64-year rainfall average is 11.1 inches, which is characteristic of dry weather climates. Table 3.4 indicates that peak wet weather flows at the WWTF, for the past three years, were slightly higher than the peak dry weather flows. The peak wet weather hourly flow experienced at the WWTF was 2.38 (1996) and the peak dry weather hourly flow was 2.26 (1995). For this reason, the peaking factors developed for the dry weather conditions will be increased slightly to reflect peak wet weather conditions.

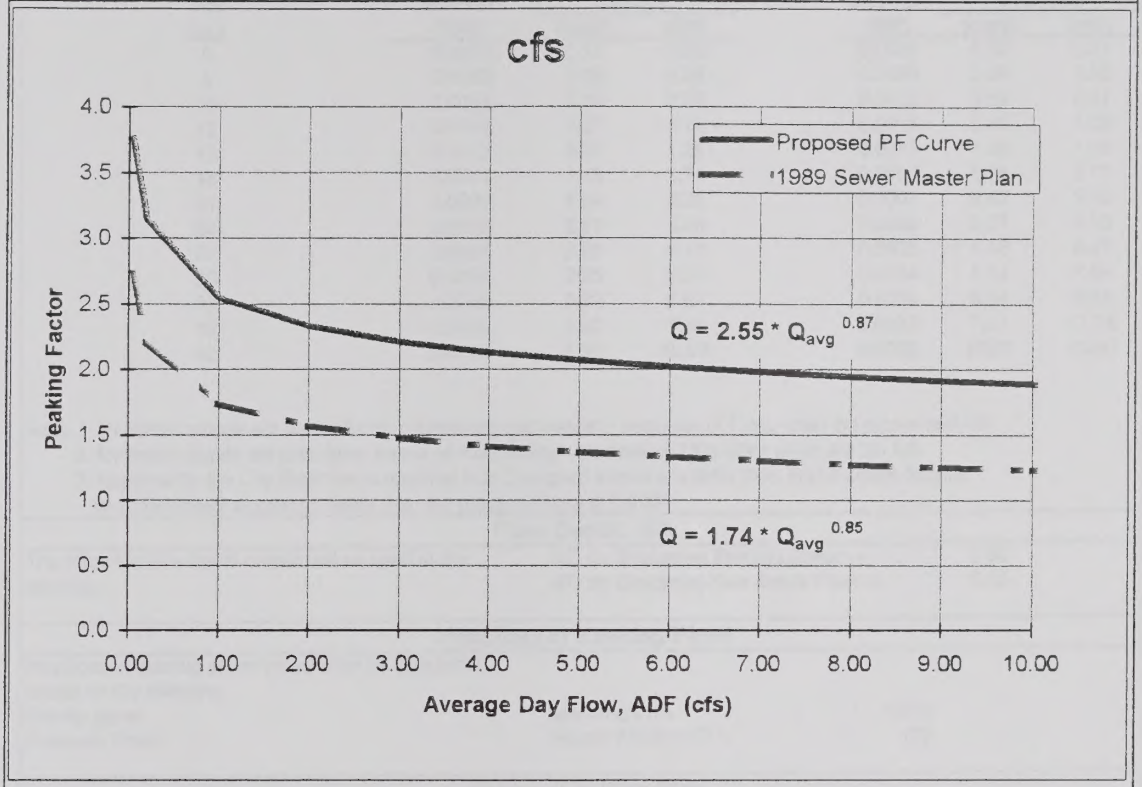
It should be noted that while the highest measured peaking factors at the WWTF was 2.38 times higher than the average sewer flows, actual peaks in the trunk and subtrunk system are expected to be higher. Typically, peaking factors of 2.0 are used to estimate peak flows at treatment facilities, and peaking factors ranging between 3.0 and 4.0 are used to estimate peak flows in the smaller upstream areas of the system. In the case of Porterville, the measured peaking factor at the WWTF is approximately 2.4.

Figure 3.5 shows the peaking curve developed for the City's sewer system. In order to reflect higher instantaneous peaks experienced in the smaller upstream sewer pipes, the peaking factor curve decreases exponentially as the cumulative ADF increase.

3.0 PLANNING AND DESIGN CRITERIA SUMMARY

Table 3.8 provides a summary of the recommended planning criteria for the Porterville sewer system master plan.

Figure 3.5 Peaking Factor Curve
City of Porterville Sewer System Master Plan



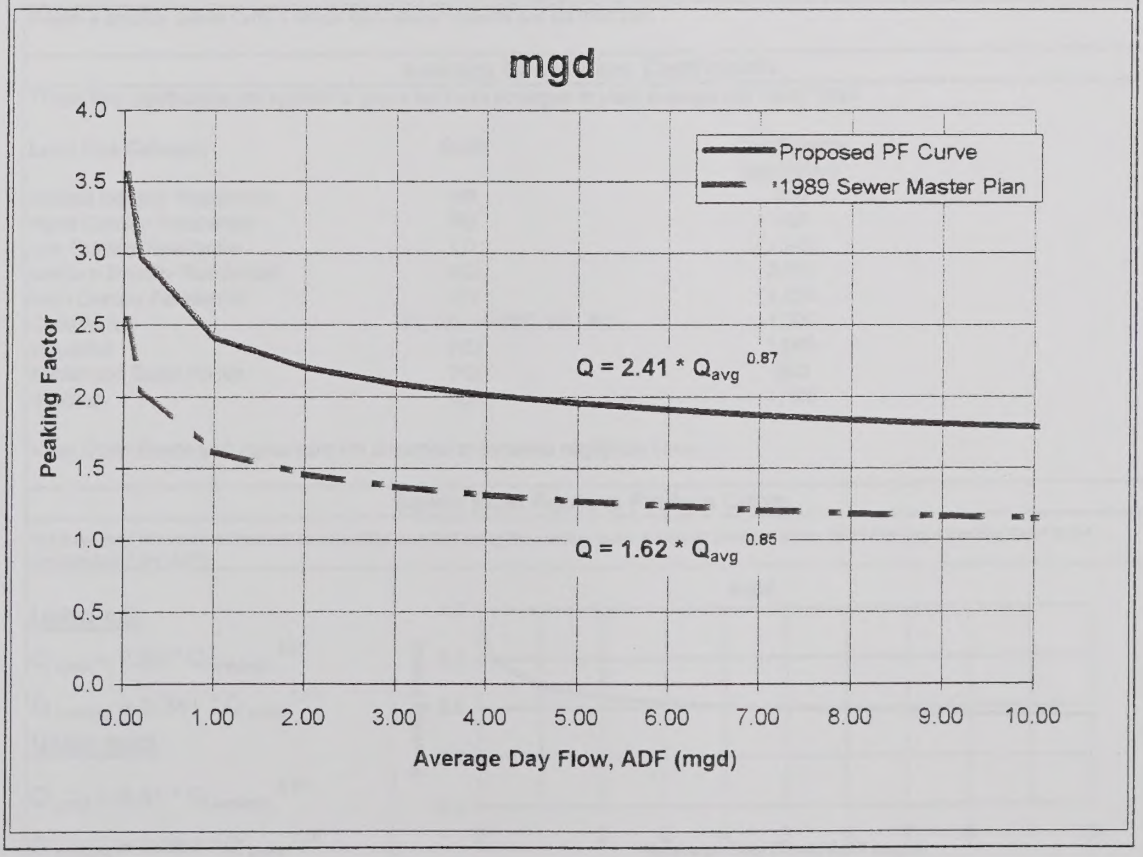


Table 3.8 Planning and Design Criteria Summary
City of Porterville Sewer System Master Plan

Minimum Slopes for New Circular Pipes

Slopes were calculated using Manning's formula for pipes flowing 1/2 full and 3/4 full, with a mimum velocity of 2fps

Pipe Size (in.)	d/D = 0.50 Preferred Slope (1) (ft/ft)	Pipe Capacity (mgd)	Pipe Capacity (cfs)	d/D = 0.75 Minimum Slope (2) (ft/ft)	Pipe Capacity (mgd)	Pipe Capacity (cfs)
6	0.0049	0.13	0.20	0.0038	0.20	0.31
8	0.0033	0.22	0.35	0.0026	0.36	0.55
10	0.0025	0.35	0.55	0.0019	0.56	0.87
12	0.0019	0.50	0.78	0.0015	0.79	1.23
15	0.0015	0.81	1.25	0.0011	1.28	1.98
18	0.0011	1.13	1.74	0.0009	1.78	2.75
21	0.0009	1.54	2.38	0.0007	2.43	3.76
24	0.0008	2.07	3.20	0.0006	3.27	5.05
27	0.0007	2.65	4.10	0.0005	4.18	6.47
30	0.0006	3.25	5.02	0.0004	5.13	7.94
33	0.0005	3.82	5.91	0.0004	6.04	9.34
36	0.0005	4.82	7.46	0.0003	7.61	11.78
42	0.0004	6.50	10.06	0.0003	10.27	15.90

Note: 1. Preferred slopes are desirable for maintaining self cleaning velocities of 2 fps, when the pipe is half-full.
2. Minimum slopes are calculated based on maintinaing velocities of 2 fps when pipes are 3/4 full.
3. Approval by the City Engineer is required if: a) Designed slopes are flatter than the Minimum Slopes, or b) Designed slopes are flatter than the practical slope of 0.0008

Flow Depth, d/D

The following flow depth criteria will be used in the analysis:	d/D for Evaluating Existing Sewers =	0.90
	d/D for Designing New Sewer Pipes =	0.75

Headloss in Existing Pipes

Headloss in existing sewer pipes shall be calculated based on the following:		
Gravity pipes	Manning's n =	0.013
Pressure Pipes	Hazen William's C =	120

Changes in Pipe Size

When a smaller sewer joins a larger one, sewer crowns will be matched

Average Sewer Flow Coefficients

These flow coefficients are applied to gross land use acreages to yield average day sewer flows

Land Use Category	Code	Coefficients (gpd/acre)
Hillside Density Residential	HR	300
Rural Density Residential	RD	400
Low Density Residential	LD	1,240
Medium Density Residential	MD	2,750
High Density Residential	HD	4,250
Commercial	NC, GC, HWYC, HC, PO	1,000
Industrial	IND	1,000
Public and Quasi Public	PQ	500
Schools	SCH	1,100

Note: Open Space and Agriculture are assumed to generate negligible flows.

Sewer Flow Peaking Factors Curve

The peak hour dry weather flows will be calculated by either using the peaking factor equations provided below, or by applying a peaking factor to the Average Day Flow (ADF).

Units: cfs

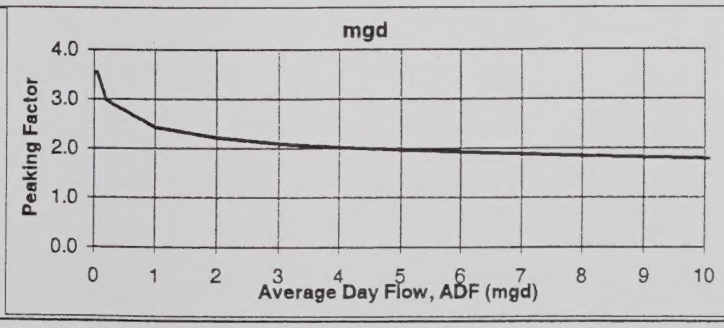
$Q_{peak} = 2.55 * Q_{average}^{0.87}$

$Q_{average} = 0.341 * Q_{peak}^{1.15}$

Units: mgd

$Q_{peak} = 2.41 * Q_{average}^{0.87}$

$Q_{average} = 0.364 * Q_{peak}^{1.15}$



Chapter 4

EXISTING SEWER SYSTEM AND HYDRAULIC MODEL

This chapter describes the existing sewer system and the hydraulic sewer model assembled for evaluating the collection system. This chapter also presents the results of the flow monitoring program and calibration effort which was performed to establish a level of confidence in the City's hydraulic model.

1.0 EXISTING SEWER SYSTEM

The City of Porterville's sewer collection system consists of approximately 150 miles of 6-inch through 36-inch diameter sewers, and includes 18 sewage lift stations and associated force mains. The "backbone" of the system consists of the trunk sewers, generally 12 inches in diameter and larger, which function to convey the wastewater collected in the City to the Wastewater Treatment Facility (WWTF), located at the southwest intersection of Grand Avenue and Prospect Street.

Trunk Sewers

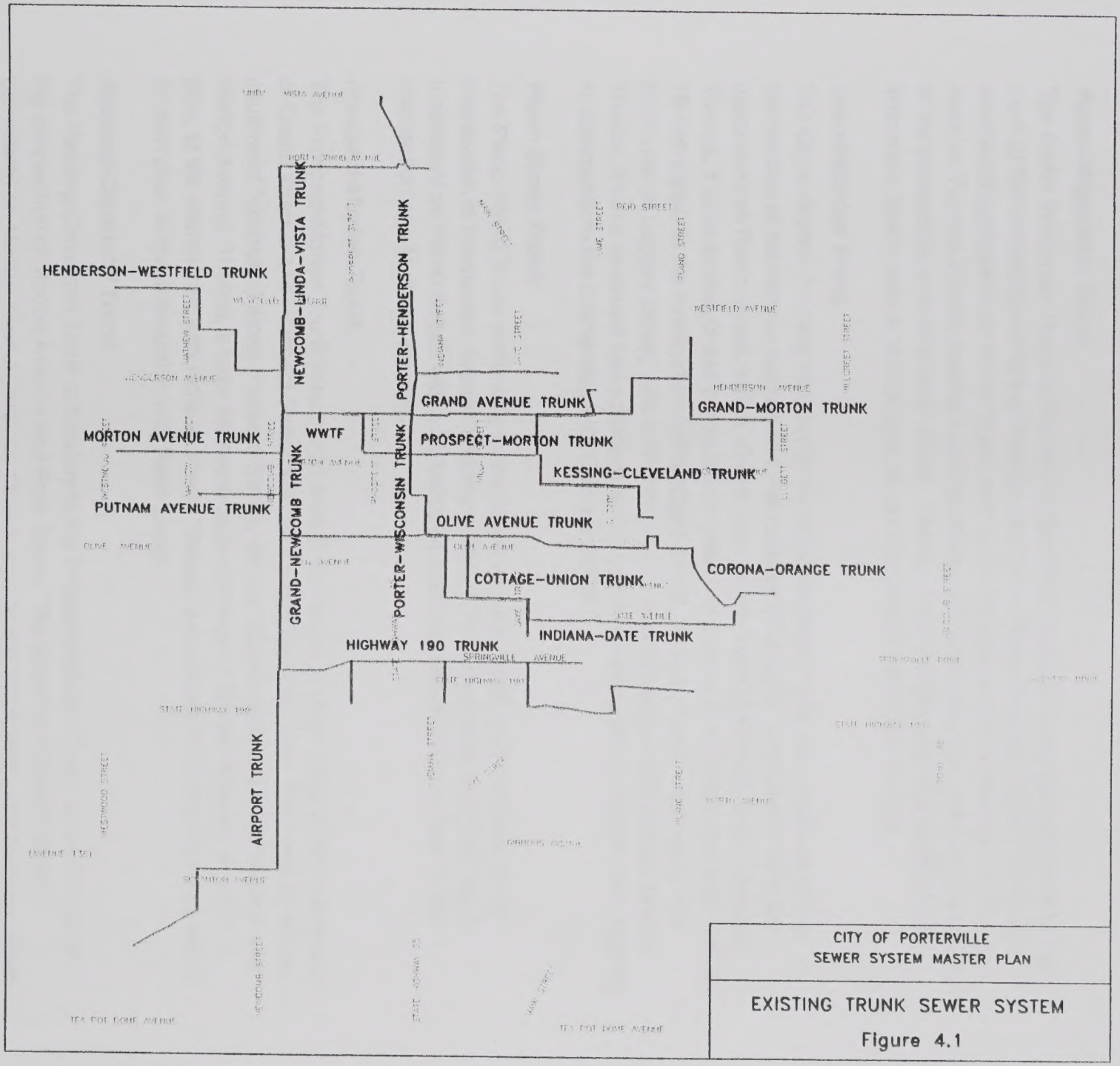
The major components of the City's trunk sewer system are shown on Figure 4.1, and their major alignments described below starting at the downstream end and continuing upstream. Each trunk sewer has been assigned a name that identifies it with the predominant street(s) alignment.

Grand Avenue Trunk

The Grand Avenue Trunk starts at the WWTF and extends eastward along Grand Avenue, with a 21-inch pipe, to the intersection of G Street. It then continues eastward along Grand Avenue, with a 27-inch pipe, to the intersection with Second Street. It then turns northward and continues on Second Street, with a 27-inch pipe, to the intersection with Henderson Avenue. It then jogs eastward and continues on Henderson Avenue, with an 18-inch pipe, to the intersection with Plano Street.

Porter-Henderson Trunk

The Porter-Henderson Trunk is tributary to the Grand Avenue Trunk, and connects to that trunk at the intersection of Grand Avenue and Porter Road. The sewer continues northward (upstream) on Porter Road, with a 15-inch pipe then with a 12-inch pipe, to the intersection with Henderson Avenue. Thence, it continues northward in an easement, with a 12-inch pipe, to Mulberry Avenue. Thence, it continues northward in an easement with a 10-inch pipe, to the intersection with Westfield Avenue.


HENDERSON–WESTFIELD TRUNK
NEWCOMB–LINDA–VISTA TRUNK
PORTER–HENDERSON TRUNK
GRAND AVENUE TRUNK
GRAND–MORTON TRUNK
MORTON AVENUE TRUNK
WWTF
PROSPECT–MORTON TRUNK
KESSING–CLEVELAND TRUNK
PUTNAM AVENUE TRUNK
GRAND–NEWCOMB TRUNK
PORTER–WISCONSIN TRUNK
OLIVE AVENUE TRUNK
CORONA–ORANGE TRUNK
COTTAGE–UNION TRUNK
INDIANA–DATE TRUNK
HIGHWAY 190 TRUNK
AIRPORT TRUNK
CITY OF PORTERVILLE
SEWER SYSTEM MASTER PLAN
EXISTING TRUNK SEWER SYSTEM
Figure 4.1

This trunk also includes a 10-inch subtrunk on Henderson Avenue, connecting at the intersection with Porter Avenue and Henderson Avenue, and continuing eastward (upstream) on Henderson Avenue to the intersection with G Street.

Porter-Wisconsin Trunk

The Porter-Wisconsin Trunk is tributary to the Grand Avenue Trunk, and connects to that trunk at the intersection of Grand Avenue and Porter Road. The trunk sewer continues southward (upstream) on Porter Road, with a 12-inch pipe, to the intersection of Putnam Avenue. Thence, it turns eastward and continues on Putnam Avenue, with a 12-inch pipe, to the intersection with Wisconsin Street. Thence, it turns southward and continues on Wisconsin Street, with a 12-inch pipe, to the intersection with Olive Avenue.

Grand-Morton Trunk

The Grand-Morton Trunk is tributary to the Grand Avenue Trunk, and connects at the intersection of Henderson Avenue and Plano Street. The sewer continues southward (upstream) on Plano Street, with a 10-inch pipe, to the intersection with Grand Avenue. Thence, it turns eastward and continues on Grand Avenue, with a 12-inch and then with an 18-inch pipes, to the intersection with Leggett Street. Thence, it turns southward and continues on Leggett Street, with a 12-inch pipe, to the intersection with Morton Avenue. Thence, it turns eastward and continues along Morton Avenue, with a 10-inch pipe, jogging in easements to the intersection with Hillcrest Street.

Plano Street Trunk

The Plano Street Trunk is tributary to the Grand Avenue Trunk, and connects at the intersection of Henderson Avenue and Plano Street. The sewer continues northward (upstream) on Plano Street, with a 12-inch pipe and then with an 18-inch pipe, to the intersection with Mulberry Avenue.

Prospect-Morton Trunk

The Prospect-Morton Trunk joins the 21-inch Grand Avenue Trunk, west of the intersection of Grand Avenue and Prospect Street, with an 18-inch diameter pipe. The trunk continues southward (upstream) along Prospect Street, with an 18-inch pipe, to the intersection with Morton Avenue. Thence, it turns eastward and continues on Morton Avenue, an 18-inch pipe, to the intersection with Indiana Street. Thence, it continues on Morton Avenue, with a 21-inch pipe, to the intersection with Palm Street.

Kessing-Cleveland Trunk

The Kessing-Cleveland Trunk is tributary to the Prospect-Morton Trunk, and connects at the intersection of Morton Avenue and Palm Street. The sewer continues eastward (upstream) on Morton Avenue, with an 18-inch pipe, to the intersection with Kessing Street. Thence, it continues southward along Kessing Street, with an 18-inch pipe, to the intersection with Cleveland Avenue. At the intersection of Kessing Street and Cleveland Avenue, the sewer splits into a parallel sewer system (15 and 12-inch pipes) that continues eastward along Cleveland Avenue to the intersection of Second Street. In general, lands

located north of Cleveland Avenue are tributary to the 12-inch pipe on the north side of the street, while lands located south of Cleveland Avenue are tributary to the 15-inch pipe.

Palm-Sunnyside Trunk

The Palm-Sunnyside Trunk is tributary to the Prospect-Morton Trunk, and connects at the intersection of Morton Avenue and Palm Street. The sewer continues northward (upstream) on Palm Street, with a 15-inch pipe, to the intersection with Grand Avenue. Thence, it turns eastward and continues along Grand Avenue, with a 15-inch pipe, paralleling the Grand Avenue Trunk to the intersection with Sunnyside Street. Thence, it turns northward and continues along Sunnyside Street, with a 12-inch pipe, to the intersection with Danner Avenue.

Grand-Newcomb Trunk

The Grand-Newcomb Trunk starts at the WWTF and extends westward (upstream) along Grand Avenue, with a 30-inch pipe, to the intersection with Newcomb Street. Thence, it turns southward and continues on Newcomb Street, with a 27-inch pipe, to the intersection with Olive Avenue. Thence, it continues southward on Newcomb Avenue, with a 36-inch pipe to Tule River, crossing to the south side of the river with a 24-inch force main.

Olive Avenue Trunk

The Olive Avenue Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and Olive Avenues. Thence, it continues eastward on Olive Avenue, with a 24-inch pipe, to the intersection with Indiana Street. Thence, it continues eastward, with a 21-inch pipe, to the intersection with Jaye Street. Thence, it continues eastward on Olive Avenue, with an 18-inch pipe, to the intersection with Fourth Street. Thence, it jogs northward along Fourth Street, with an 18-inch pipe, to the intersection with Willow Avenue. Thence, it jogs eastward along Willow Avenue and crossing the Santa Fe Railroad to the Fairgrounds, then southward along the Railroad to Olive Avenue. Thence, it continues eastward along Olive Avenue, with an 18-inch pipe, to the intersection with Corona Drive.

Corona-Orange Trunk

The Corona-Orange Trunk is tributary to the Olive Avenue Trunk, and connects at the intersection of Olive Avenue and Corona Drive. The sewer continues southeastwardly (upstream) along Corona Drive, with an 18-inch pipe, to the intersection with Park Street. Thence, it continues along Corona Drive in a northeasterly direction, with a 15-inch pipe, to the intersection with Orange Avenue. Thence, it continues eastward on Orange Avenue, with a 15-inch pipe, to the intersection with Legget Street.

Putnam Avenue Trunk

The Putnam Avenue Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and Putnam Avenue. The sewer continues westward (upstream) along Putnam Avenue, with a 12-inch pipe, to the intersection with Mathew Street.

Morton Avenue Trunk

The Morton Avenue Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and Morton Avenue. The sewer continues westward (upstream) along Morton Avenue, with a 12-inch pipe, to the intersection with Mathew Street. Thence, it continues on Morton Avenue in a westerly direction, with a 6-inch double barrel force main, to the pump station located at the intersection with Westwood Street.

Indiana-Date Trunk

Indiana-Date Trunk is tributary to the Olive Avenue Trunk, and connects at the intersection of Olive Avenue and Indiana Street. The sewer continues southward (upstream) along Indiana Street, with a 21-inch pipe, to the intersection with Union Avenue. Thence, it turns and continues eastward along Union Avenue, with a 21-inch pipe, to the intersection with Jaye Street. Thence, it turns southward and continues on Jaye Street, with a 21-inch pipe, to the intersection with Date Avenue. Thence, it turns and continues eastward on Date Avenue, with a 21-inch pipe, to the intersection with A Street. Thence, it continues eastward on Date Avenue, with an 18-inch pipe, to the intersection with Park Street.

Cottage-Union Trunk

The Cottage-Union Trunk is tributary to the Olive Avenue Trunk, and connects at the intersection of Olive Avenue and Cottage Street. The sewer continues southward (upstream) along Cottage Street, with an 18-inch pipe, to the intersection with Union Avenue. Thence, it turns and continues eastward along Union Avenue, with an 18-inch pipe, to the intersection with Jaye Street. Thence, it turns southward and continues on Jaye Street, with a 21-inch pipe, to the Tule River. It crosses the Tule River and continues southward along Jaye Street, with a 15-inch pipe, to the intersection with Springville Avenue. Thence, it turns eastward and continues along Springville Avenue, with a 12-inch pipe, to the intersection with E Street.

Springville Trunk

The Springville Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and Springville Avenue. The sewer continues eastward (upstream) along the extended alignment of Springville Avenue, with a 24-inch pipe, to the intersection with Indiana Street. Thence, it continues eastward along Springville Avenue, with an 18-inch pipe, to the intersection with Jaye Street, Thence, it continues along Springville Avenue, with a 15-inch pipe, to the intersection with E Street.

Prospect Street Trunk

The Prospect Street Trunk is tributary to the Springville Trunk, and connects at the intersection of Prospect Street and the extension of Springville Avenue. Thence, it continues southward (upstream) along Prospect Street, with an 18-inch pipe, to the south side of Highway 190.

Indiana-Gibbons Trunk

The Indiana-Gibbons Trunk is tributary to the Springville Trunk, and connects at the intersection of Springville Avenue and Indiana Street. It then continues southward on Indiana Street with a 10-inch pipe to the intersection with Gibbons Avenue. Thence, it turns eastward on Gibbons Avenue with a 10-inch pipe and continues to Main Street.

Jaye-Poplar Trunk

The Jaye-Poplar Trunk is tributary to the Springville Trunk, and connects at the intersection of Springville Avenue and Jaye Street. Thence, it continues southward (upstream) along Jaye Street, with a 12-inch pipe, to the intersection with Poplar Avenue. Thence, it turns and continues eastward along Poplar Avenue, with a 12-inch pipe, to the intersection with Main Street. Thence, it turns northward and continues along Main Street, with a 12-inch pipe, to the intersection with Vandalia Avenue. Thence, it turns eastward and continues along Vandalia Avenue, with a 12-inch pipe, to the intersection with Plano Street. This 12-inch also sewer continues eastward, jogging to Poplar Avenue and servicing the Porterville Development Center.

Airport Trunk

The Airport Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and south of Tule River. Thence, it continues southward (upstream) along Newcomb Street, with a 24-inch sewer, to the intersection with Scranton Avenue. Thence, it turns westward and continues along Scranton Avenue, with a 24- inch pipe and then with a 21-inch pipe, to the extension of Mathew Road. Thence, it turns and continues southward on the projection of Mathew Road, with a 21-inch pipe, for approximately quarter mile. Thence, it turns in a southwesterly direction and continues, with an 18-inch pipe, to the northeast side of the existing stabilization ponds.

Newcomb-Linda Vista Trunk

The Newcomb-Linda Vista Trunk is tributary to the Grand-Newcomb Trunk, and connects at the intersection of Newcomb Street and Grand Avenue. Thence, it continues northward (upstream) along Newcomb Avenue, with an 18-inch pipe, to the intersection with Henderson Avenue. Thence, it continues northward along Newcomb Street, with a 27-inch pipe, to the intersection with Mulberry Avenue. Thence, it continues northward along Newcomb Street, with an 18-inch pipe, for approximately 600 feet to a lift station. Thence, it continues northward along Newcomb Street, with a 27-inch pipe, to the intersection with Median Circle. Thence, it continues northward along Newcomb Street, with a 24-inch pipe, to the intersection of North Grand Avenue. Thence, it turns eastward and continues along North Grand Avenue, with a 21-inch pipe, to the intersection with Prospect Street. Thence, it continues eastward along North Grand Avenue, with an 18-inch pipe, to the west side of Highway 65, and thence crosses under the highway with a 12-inch pipe. Thence, it turns north westerly and continues along the east side of Highway 65 with a 12-inch pipe, to the intersection with Linda Vista Avenue. Thence, it turns east along Linda Vista with an 8-inch pipe to North Main Street.

This trunk includes a subtrunk that connects at the intersection of Newcomb Street and Henderson Avenue. The subtrunk continues northward along Newcomb Street, with a 12-inch pipe, then with a 10-inch pipe, then with an 8-inch pipe, paralleling the Mulberry Trunk to Mulberry Avenue.

Henderson-Westfield Trunk

The Henderson-Westfield Trunk is tributary to the Newcomb-Linda Vista Trunk, and connects at the intersection of Newcomb Street and Henderson Avenue. Thence, it continues westward along Henderson Avenue, with a 12-inch pipe, to the intersection with Belmont Street. Thence, it turns northward and continues along Belmont Street, with a 12-inch pipe, to the intersection with Mulberry Avenue. Thence, it turns westward and continues along Mulberry Avenue, with a 6-inch force main, to a pump station at the intersection with Mathew Street. Thence, it turns and continues northward along Mathews Street, with a 12-inch pipe, to the intersection with Westfield Avenue. Thence, it turns and continues westward along Westfield Avenue, with a 12-inch and then 10-inch pipe, to the intersection with Lombardi Street. Thence, it continues westward along Westfield Avenue, with a 6-inch force main, to a lift station at the intersection with Westwood Avenue.

Pump/Lift Stations

Sewer flows are conveyed via gravity sewers to the wastewater treatment facility. Due to the relatively flat topography of the City, lift station were incorporated in the sewer trunk system at locations where the elevation of the sewers needed to be raised.

Field evaluations of the lift stations (Figure 4.1) were not a part of this master plan, and thus were not conducted.

Porter Vista Public Utility District

It should be noted that the sewer flows tributary to the WWTF include flows from the Porter Vista Public Utility District (PVPUD), located east of Porterville. Approximately 80 percent of the flows from PVPUD are pumped from a lift station located on the east side of Park Street, and approximately 450 feet north of the intersection with Date Avenue. The pumped flows are routed south along Park Street and then west along Date Avenue, via the City's 18-inch trunk sewer on Date Avenue. The remaining 20 percent of the flows from PVSD are routed via a 12-inch gravity pipe to the lift station at Jaye Street and south of Tule River. These flows are then pumped northward across the Tule River into the City's existing 18-inch trunk sewer along Jaye Street. Since flows from PVPUD are not currently metered, they were estimated based on historical flow monitoring readings and updated land use.

Table 4.1 Existing Lift Stations
City of Porterville Sewer System Master Plan

Pump/Lift Station No.	Location	Pump Capacity[1] (gpm)	Inclusion in Capacity Analysis[2]
PS-1	Mulberry/Highway 65	600	Yes
PS-2	Porter Rd. s/o Henderson Ave.	600	Yes
PS-3	Newcomb n/o Mulberry	900	Yes
PS-4	Newcomb/N. West Grand	100	Yes
PS-5	Putnam/Matthew	140	Yes
PS-6	Jaye/Tule River	1,200	Yes
PS-7	Airport	200	Yes
PS-8	Park St./Success Dr.	n/a	No
PS-9	Morton/Westwood	270	Yes
PS-10	Poplar/G	n/a	No
PS-11	Mulberry/Matthew	180	Yes
PS-12	OHV Park	300	No
PS-13	Morton/Matthew	150	No
PS-14	Newcomb/Date	150	No
PS-15	Newcomb s/o Tule River	2,000	Yes
PS-16	Matthew/Union	n/a	No
PS-17	Scranton w/o Hwy 65	900	Yes
PS-18	Westwood/Westfield	240	Yes
PS-19	Lime St.	200	No
PS-20	Westwood/Roby	120	No

Notes:
1. Capacities, as provided by City staff on September 25, 1998.
2. Pump/Lift Station along the modeled hydraulic trunk sewer system were evaluated for capacity. The hydraulic model does not provide capacity flows for the smaller lift stations.

Flow Diversions

Flow diversions serve the purpose of routing flows to relieve sewer trunks capacity limitations. The City's sewer system includes the following active diversions.

- Grand Avenue Diversion. This diversion is located on Grand Avenue, at the intersection with Palm Street. The existing 15-inch sewer trunk on Grand Avenue turns southward at the intersection with Palm Street, and continues southward until it joins the Prospect Morton Trunk. The diversion allows flows from the 15- inch trunk on Grand Avenue to continue westward in the existing 18-inch trunk sewer along Grand Avenue (Grand Avenue Trunk).
- Union Avenue Diversion. This diversion is located on Union Avenue, at the intersection with Jaye Street. The existing 21-inch sewer trunk on Jaye Street, a part of the Indiana-Date Trunk, turns westward at Union Avenue and continues to the intersection with Indiana Street. The diversion allows flows at that intersection to continue to the 18-inch sewer trunk on Union Avenue - a part of the Cottage- Union Trunk .

2.0 HYDRAULIC MODEL

Hydraulic network analysis is a powerful tool used in sewer collection planning, design, operation, management, and emergency response. Porterville's hydraulic sewer model is a critical element that was used in evaluating the adequacy of the City's existing sewer system and in planning the City's future facilities.

Hydraulic Model Selection

There is an abundance of sewer analysis software in the marketplace today, with a variety of features and capabilities. The selection of a particular model generally depends on user preferences and the complexity of the sewer system.

At the beginning of this project, a workshop was held with City staff to discuss the criteria, features, and costs desired in a hydraulic model. The criteria that were considered include: hydraulic analysis capabilities, availability of support, graphics output types, model capacities, simulation characteristics, ease of use, input formats, and finally cost. It was agreed that HydraGraphics version 2 would be used by Carollo Engineers to assemble the hydraulic model.

HydraGraphics consists of multiple products that work together to bring a graphical approach to the analysis and design of sanitary sewer collections systems. HydraGraphics is the graphical user interface (GUI) for the hydraulic analysis engine HYDRA, which was developed in 1973 by PIZER Inc. Additionally, GISMaster is an "add-on" tool which runs within AutoCAD version 14 and facilitates the assembly of the hydraulic model. It should be noted that the assembled hydraulic model can be easily exported to ARCVIEW or ARCINFO.

Elements of the Hydraulic Model

The City's hydraulic model combines information on the physical and operational characteristics of the sewer system, and performs calculations to solve a series of mathematical equations to simulate flows in pipes. Elements comprising the computer modeling process are: skeletonizing the sewer system, defining pipes and nodes, and identifying the service areas.

Skeletonizing

Skeletonizing is the process by which sewer systems are stripped of pipelines not considered essential for the intended analysis purpose. The purpose of skeletonizing a system is to develop a model that accurately simulates the hydraulics of the pipelines collecting sanitary sewer flows. At the same time, skeletonizing should reduce the complexity of the large model, minimizing the time of analysis, and comply with the limitations imposed by the computer program.

The "backbone" of the Porterville sewer system, generally pipes 12 inches in diameter and larger and which function to convey the wastewater collected in the City to the Wastewater Treatment Facility (WWTF), were included in the model. The modeled trunk system was described in detail in a previous section.

Pipes and Manholes

Computer modeling requires gathering detailed numerical information on the physical characteristic of the modeled sewer system, such as pipe sizes (diameters), pipe lengths, pipe invert elevations at the upstream and downstream manholes, pipe slope, ground elevations at the manholes, and general system geometry.

Pipes and manholes represent the physical elements describing the sewer system. A manhole represents a location in the network where a sewer flow can be applied to the trunk sewer system, while a pipe segment represents an element of the actual collection system. Additionally, pumps and diversion within the skeletonized system are included in the computer model.

Sewer Tributary Areas

Allocating sewer flows to appropriate locations throughout the trunk system was accomplished by defining sewer areas tributary to individual manholes, identifying the areas (acres) of sewer user groups within each service area, then applying the appropriate average day demand coefficients to each sewer user group in those areas. Sewer flow distribution was performed based on the land use categories generating flows in accordance with the developed average day demand conditions. These coefficients were defined and discussed in a previous chapter.

Hydraulic Model Calibration

Porterville's hydraulic model was calibrated to establish a level of confidence in the pressures and flows that it simulates. The calibrated model serves as an established benchmark for further analysis and evaluation. Future analysis consist of modifications to the calibrated model to simulate other sewer flow patterns or additional facilities.

Calibration is complicated by the fact that some data are known and unchanging, some are variable over time, while others are estimated. Pipe and manhole information such as diameter, lengths, slopes, and location are known. Flow data obtained from the WWTF records and from the flow monitoring program, vary with time of day, season, and total number of customers. Porterville's model was calibrated for the flows simulated during the flow monitoring period of February 5th and February 11th 1998.

Table 4.2 provides a comparison in flows and in percentage between the model simulated results and the flow monitored data. The comparison shows that the calibration effort yielded reasonable values, maintaining a flow distribution accuracy of 15 percent or better.

Table 4.2 Model Calibration Results
City of Porterville Sewer System Master Plan

Site No.	Pipe Size (inches)	Historical Average Daily Flow (mgd)	ADS Measured 2/10/1998 Flows (mgd)	ADS Measured 2/10/1998 Flows (cfs)	Projected Average Day Flows (mgd)	Projected Average Day Flows (cfs)	Modeled Flows (mgd)	Modeled Flows (cfs)	Variance (mgd)	Variance (percent)
PV-01	27	0.24	0.23	0.36	0.26	0.40	0.34	0.52	0.1	15%
PV-02	12	0.11	0.12	0.19	0.14	0.21	0.17	0.26	0.0	13%
PV-03	15	0.25	0.24	0.37	0.27	0.42	0.26	0.41	0.0	-1%
PV-04	18	0.50	0.53	0.82	0.60	0.92	0.49	0.76	-0.1	-14%
PV-05	18	0.61	0.61	0.94	0.69	1.06	0.74	1.14	0.0	4%
PV-06	27	1.98	2.03	3.14	2.29	3.54	2.29	3.54	0.0	0%
PV-07	36	0.44	0.48	0.74	0.54	0.84	0.72	1.12	0.2	16%
PV-08	21	1.26	1.27	1.97	1.43	2.22	1.23	1.91	-0.2	-10%
PV-09	18	0.55	0.55	0.85	0.62	0.96	0.62	0.96	0.0	0%
PV-10	21	0.09	0.08	0.12	0.09	0.14	0.09	0.14	0.0	0%
PV-11	21	0.58	0.57	0.88	0.64	0.99	0.69	1.07	0.0	5%
PV-12	18	0.32	0.34	0.53	0.38	0.59	0.43	0.67	0.0	7%

Chapter 5

SEWER SYSTEM EVALUATION AND PROPOSED FACILITIES IMPROVEMENTS

The capacity evaluation of the City's sewer collection system was performed utilizing the assembled computer hydraulic model, and was based on the criteria established in a previous chapter. This chapter presents proposed facilities improvements to mitigate existing deficiencies and for expansion of the future sewer system.

1.0 EXISTING COLLECTION SYSTEM DEFICIENCIES

Based on the evaluation criteria discussed in a previous chapter, the hydraulic model was used to further evaluate the capacity adequacy of the existing collection system. The historical total flows to the wastewater treatment facility were discussed in a previous chapter and summarized on Table 3.4. In 1997, flows measured at the wastewater treatment facility (WWTF) averaged at 4.82 million gallons per day (mgd), with a maximum day dry weather measurement of 5.41 mgd and a maximum day wet weather measurement of 5.64 mgd. Table 3.4 also lists 9.90 mgd as the peak hour wet weather flow (PWWF) measurement at the WWTF for 1997, and 9.80 mgd as the peak hour dry weather flow (PDWF) for the same year. Accordingly, a peak flow of 9.8 mgd was simulated in the hydraulic model to determine the current system deficiencies.

Though some 8-inch sewer mains were included in this study, it is impractical to include new small sewer mains (8-inches and smaller) in a master planning effort. It should be noted that developers are still responsible for paying an equitable cost allocation for the infrastructures needed to extend service from their developments to the master plan facilities.

Trunk Sewers

The recommended improvements discussed in this section are needed to mitigate existing system deficiencies. They are quantified in the Capital Improvement Program (CIP), presented in the following chapter. Since the previous master plan, and in an effort to service future growth, the City has designed and constructed two major trunk sewers. The first trunk sewer, Newcomb-Linda-Vista Trunk, services the growth in the north/northwest part of the City, while second trunk sewer, Highway 190 Trunk, services the southeast part of the City. The hydraulic evaluation identified the following deficiency:

Jaye-Vandalia Trunk

The existing 12-inch trunk sewer along the frontage road south of Highway 190, and east of Jaye Street, was identified as deficient under existing design conditions (PWWF/PDWF). During peak flows, the deficiency along this southeast trunk sewer varies between 135 and 160 percent of the design capacity. It should be noted that the design capacity for evaluating the existing sewer system allowed a Flow Depth Criteria (d/D) of 90 percent full

to prevent premature replacement of sewers. The current deficiency starts at the intersection of Jaye Streets and continues eastward (upstream) for a distance of approximately 2,100 feet. Under current flow conditions, this deficiency can be mitigated by replacing the existing 12-inch pipe with a new 15-inch pipe. Analysis runs for future growth scenarios in the southeast indicate that this pipe should be replace with a new 21-inch pipe to accommodate expansion improvements. It is thus recommended that this pipe be replaced with a new 21-inch pipe.

2.0 EXPANSION IMPROVEMENTS

Future developments will be serviced by constructing new trunk sewers that extend into the City's expansion areas. Since flows from these developments are routed through the existing trunk sewer system, they sometimes result in capacity deficiencies that require pipe size upgrades. While this section provides a general description of the major proposed expansion improvements, and Figure 5.1 provides a graphical representation of the improvements, more detailed pipe information is provided in the CIP.

Grand-Newcomb Relief Trunk

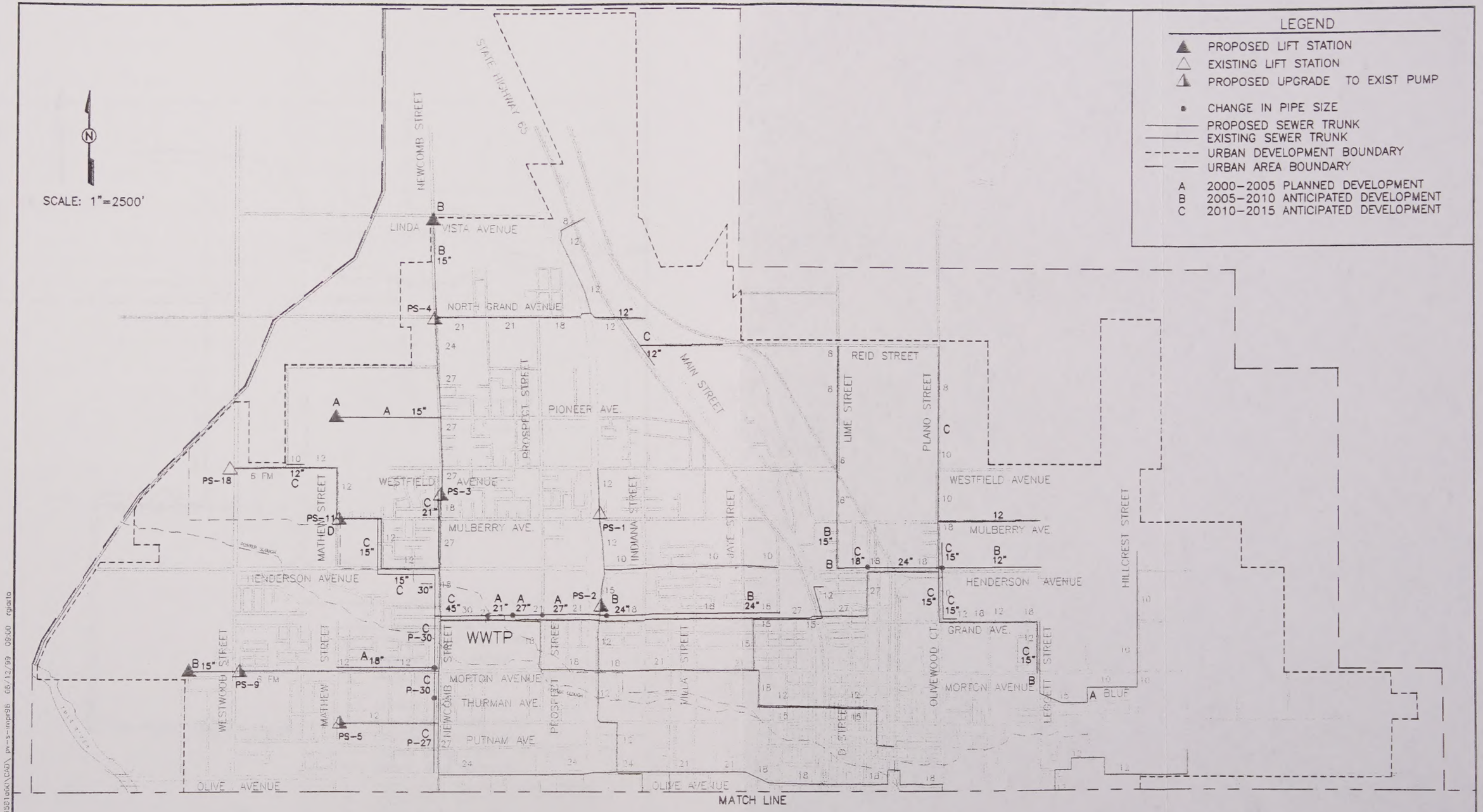
As growth continues to occur in the City's southeast expansion area (south of Tule River) as well as in the Airport area, the capacity of this trunk sewer will become deficient. The portion of the trunk sewer along Newcomb Avenue is 27 inches in diameter, while the portion along Grand Avenue is 30 inches. Per directions from City staff, it is proposed that the existing trunk sewer along Newcomb Avenue remains in service, and be paralleled with a new sewer that includes 27 and 30-inch pipes. The portion along Grand Avenue to the WWTF should be replaced with a new 45-inch pipe.

Grand Avenue Trunk

Growth in the northeast expansion will increase the sewer flows routed through this trunk sewer and will result in a capacity deficiency. It is proposed that the existing 21 and 18-inch portions of this trunk, between the wastewater treatment facility and G Street, be replaced with new 27 and 24-inch pipes, respectively. It is also proposed that the existing 18-inch portion along Henderson Avenue, between Second Street and Plano Street, be replaced with a new 24-inch pipe. Note that this project also includes a new 24-inch pipe along Second Street, to replace the existing 18-inch pipe between Laurel Avenue and Henderson Avenue.

Henderson-Westfield Trunk

Growth in the northwest expansion area will increase the sewer flows tributary to this trunk sewer and will result in a capacity deficiency. It is proposed that the existing 12-inch



CITY OF PORTERVILLE
SEWER SYSTEM MASTER PLAN

PROPOSED IMPROVEMENTS

FIGURE 5.1 SHEET 1

FEBRUARY 2001

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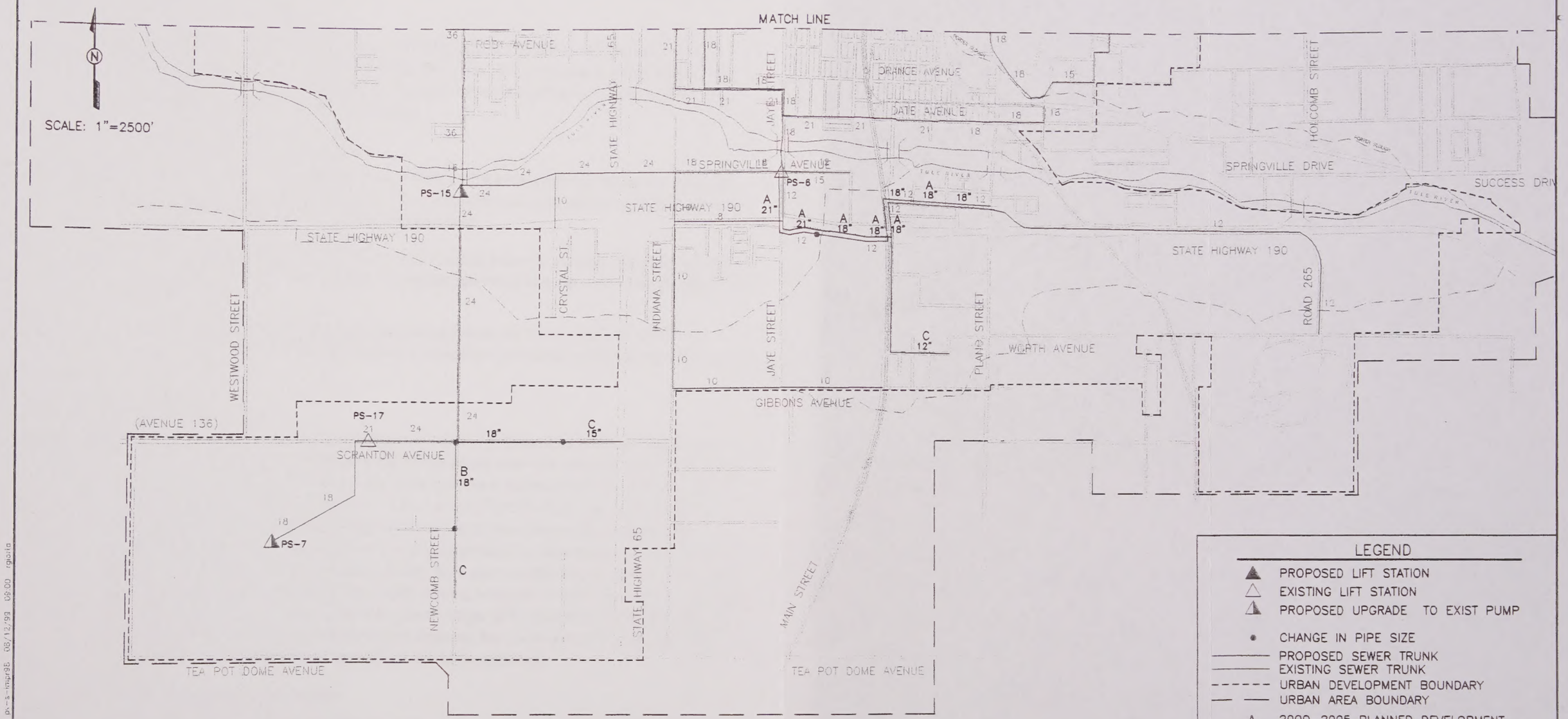

LEGEND

- PROPOSED LIFT STATION
- EXISTING LIFT STATION
- PROPOSED UPGRADE TO EXIST PUMP
- CHANGE IN PIPE SIZE
- PROPOSED SEWER TRUNK
- EXISTING SEWER TRUNK
- URBAN DEVELOPMENT BOUNDARY
- URBAN AREA BOUNDARY
- A 2000–2005 PLANNED DEVELOPMENT
- B 2005–2010 ANTICIPATED DEVELOPMENT
- C 2010–2015 ANTICIPATED DEVELOPMENT

CITY OF PORTERVILLE
SEWER SYSTEM MASTER PLAN

PROPOSED IMPROVEMENTS

FIGURE 5.1 SHEET 2

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portion of this sewer along Belmont Street, between Mulberry Avenue and Henderson Avenue, be replaced with a new 15-inch pipe. This project also includes the replacement of the existing 12-inch portion along Henderson Avenue, between Belmont Street and Newcomb Avenue, with a new 15-inch pipe.

Morton Avenue Trunk

This trunk sewer is currently running at capacity and will become deficient as growth continues to occur in the City's west expansion area. It is proposed that the existing 12-inch portion of this sewer along Morton Avenue, between Matthew Street and Newcomb Street be replaced with a new 18-inch pipe.

Newcomb-Linda-Vista Trunk

While a majority of this trunk sewer along Newcomb Street, between Grand Avenue and Median Circle, consist of 27 inch pipes with a capacity to accommodate year 2020 design flows, there are two portions that need replacement:

- The first portion is an 18-inch trunk sewer, along Newcomb Street, between Grand Avenue and Henderson Avenue. It is proposed that this potion be replaced with a new 30-inch pipe.
- The second portion is a 21-inch pipe, along Newcomb Street, north of Mulberry Avenue and south of the Lift Station. It is proposed that this portion be replaced with a new 21-inch pipe.

Jaye-Poplar Trunk

The hydraulic model indicates that this sewer trunk is deficient under current peak flow conditions, due in part to the pipe's relatively flat slope, and thus requires replacement with a 15-inch pipe. Anticipated future flows in the southeast will increase the deficiency and require a larger pipe size replacement. It is proposed that this trunk be replaced with a new pipe that follows the existing alignment starting at the intersection of Springville Avenue and Jaye Street, and continuing south (upstream) on Jaye Street, then east along the Frontage Road, then north on Main Street, then east on Vandalia Avenue. This new trunk, with proposed replacement pipe sizes varying between 21 and 18 inches in diameter, is proposed to be constructed in the first growth stage (2000-2005) of this master plan. It should be noted that the City has recently completed the construction of an 8-inch pipe along Poplar Avenue, between Jaye Street and Indiana Street.

W. North Grand-Main Trunk

This new sewer trunk will service the north expansion area east of Main Street and south of Linda Vista Avenue. The proposed new trunk sewer, which will connect to the existing 12-inch trunk sewer on North Grand Avenue and east of Highway 65, consist of 12-inch pipes.

Airport Service Area Trunks

Growth in the Airport expansion area will require the extension of the Airport Trunk Sewer to service new developments. The CIP provides recommended stages for expanding this service area which will include new pipes with pipe sizes ranging from 18 to 10 inches in diameter.

3.0 PUMP/LIFT STATIONS

Pump and lift stations along the sewer trunk system were incorporated in the hydraulic computer model and a capacity evaluation was included. The evaluation is summarized in Table 5.1, lists each pump/lift station capacity, and the corresponding modeled current design flows, and anticipated projected sewer flows at the planning horizon year 2015. Recommended capacity upgrades are divided into two separate columns: the first upgrade mitigates the existing capacity deficiencies and the second upgrade meets the capacity needs through year 2015.

Table 5.1 Proposed Lift Station Upgrade
City of Porterville Sewer System Master Plan

Pump Station No.	Location	Existing Pumps		Existing Deficiency						Future Expansion				
		Existing Pump Firm Capacity [1] (gpm)	Existing Pumps and Total Capacity (gpm)	2000 Design Flows (gpm)	Proposed 2000 Upgrade [3] (gpm)	Proposed 2000 Firm Capacity [4] (gpm)	Proposed Standby Capacity (gpm)	Proposed Total Pumps [4] (gpm)	Proposed 2000 New/Replace Pumps (gpm)	2015 Design Flows (gpm)	Proposed 2015 Firm Capacity [6] (gpm)	Proposed Standby Capacity (gpm)	Proposed 2015 New/ Replace Pumps (gpm)	Proposed Total Pumps (gpm)
PS-1	Mulberry/Highway	600	2 x 600	256	-	600	600	2 x 600	-	341	600	600	-	2 x 600
PS-2	Porter Rd. s/o Henderson	600	2 x 600	511	-	600	600	2 x 600	-	825	825	850	2 x 825	2 x 825
PS-3	Newcomb n/o Mulberry	900	2 x 900	458	-	900	900	2 x 900	-	2,415	2,500	2,500	2 x 2,500	2 x 2,500
PS-4	Newcomb/ W. North Grand	100	2 x 100	552	550	550	550	2 x 550	2 x 550	1,561	1,600	1,600	2 x 1,600	2 x 1,600
PS-5	Putnam/Matthew	140	2 x 140	256	250	250	250	2 x 250	2 x 250	503	500	500	2 x 500	2 x 500
PS-6	Jaye/Tule River	1,200	2 x 1,200	125	-	1,200	-	2 x 1,200	-	125	1,200	1,200	-	2 x 1200
PS-7	Airport	200	2 x 200	125	-	200	-	2 x 200	-	493	500	500	2 x 500	2 x 500
PS-8	Park St./Success Dr.	n/a	-	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-9	Morton/Westwood	270	2 x 270	556	770	770	770	2 x 770	2 x 770	1,200	1,200	1,200	2 x 1,200	2 x 1,200
PS-10	Poplar/G	n/a	-	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-11	Mulberry/Matthew	180	2 x 180	175	-	180	-	2 x 180	-	365	370	370	2 x 370	2 x 370
PS-12	OHV Park	300	2 x 300	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-13	Morton/Matthew	150	2 x 150	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-14	Newcomb/Date	150	2 x 150	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-15	Newcomb s/o Tule River	2,000	2 x 2,000	1,118	-	2,000	-	2 x 2,000	-	6,100	6,100	6,100	2 x 6,100	2 x 6,100
PS-16	Matthew/Union	n/a	-	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-17	Scranton w/o Hwy 65	900	2 x 900	157	-	900	-	2 x 900	-	574	900	900	-	2 x 900
PS-18	Westwood/Westfield	240	2 x 240	76	-	240	-	2 x 240	-	265	240	240	-	2 x 240
PS-19	Lime St.	200	2 x 200	note 2	-	n/a	-	-	-	note 2	-	-	-	-
PS-20	Westwood/Roby	120	2 x 120	note 2	-	n/a	-	-	-	note 2	-	-	-	-

Notes:

1 Capacities, as provided by City staff on September 25, 1998.

2 Pump/Lift Station along the modeled hydraulic trunk sewer system were evaluated for capacity. The hydraulic model does not provide capacity flows for the smaller lift stations.

3 Upgrade needed to mitigate the existing capacity deficiency.

4 Proposed Total Capacity to meet existing Flows conditions, after upgrade.

5 Additional Upgrade needed to meet flows of the planning horizon year 2015.

6 Proposed Total Capacity to meet anticipated flows by the planning horizon year of 2015.

Chapter 6

Chapter 6

CAPITAL IMPROVEMENT PROGRAM

This chapter presents the recommended Capital Improvement Program (CIP) for the City of Porterville sewer collection system. The program is based on the evaluation of the Porterville sewer collection system, and on the recommended projects described in the previous chapter. The CIP has been staged to the planning horizon year 2015.

1.0 COST ESTIMATING ACCURACY

The cost estimates presented in this study are developed from Porterville bid tabulations, cost curves, information obtained from previous studies, and Carollo Engineers experience on other projects. The American Association of Cost Engineers defines three types of cost estimates:

- An Order of Magnitude Estimate for Master Plan Studies. This is an approximate estimate made without detailed engineering data. It is normally expected that an estimate of this type would be accurate within +50 percent to -30 percent.
- A Budget Estimate for Predesign Study. A budget estimate is prepared with the use of flow sheets, layouts, and equipment details. It is normally expected that an estimate of this type would be accurate within +30 percent to -15 percent.
- A Definite Estimate (Engineer's Estimate) for Time of Contract Bidding. This estimate is prepared from very defined engineering data. The data includes fairly complete plot plans and elevations, soil data, and a complete set of specs. It is expected that a definite estimate would be accurate within +15 to -5 percent.

Costs developed for this study should be considered "order of magnitude" and have an expected accuracy range of +50 percent to -30 percent.

2.0 COST ESTIMATING CRITERIA

The cost estimates presented in the Capital Improvement Program (Table 6.1) have been prepared for general master planning purposes and for guidance in project evaluation and implementation. Final costs of a project will depend on actual labor and material costs, competitive market conditions, final project scope, implementation schedule, and other variable factors such as: preliminary alignments generation, investigation of alternative routings, and detailed utility and topography surveys.

The capital costs do not include pipeline corridor purchases or easement costs because it was assumed that public right-of-way will be utilized wherever possible. As a result, the final capital and operating costs will vary from the estimates presented herein.

The construction costs in Table 6.1 were adjusted to reflect an Engineering News Record (ENR) construction cost index of 6367, representing costs for lower San Joaquin Valley.

This ENR index was derived from the average of the November 1998 construction cost index for the San Francisco area (ENR 6775), and the 20-Cities Average (ENR 5960).

3.0 CAPITAL IMPROVEMENT PROGRAM DEVELOPMENT

Detailed explanations for the development of the Capital Improvement Program, as presented in Table 6.1, are provided in this section. Care was taken to explain each column, in the order of its appearance in the table.

General Information

Type of Improvement. Pump stations, pipelines, jacked steel casings, and standby emergency power generators.

Street Description. A street description in which the improvement is proposed.

Limits. Limits that generally describe the beginning and end of a proposed project. This column is most useful when describing pipeline projects.

Proposed Facilities & Appurtenance Costs

Diameter. Diameter of the proposed pipe, in inches

Length. Estimated length of the proposed improvement, in feet. It should be noted that the lengths estimates account for jogs necessary for crossing major obstructions such as a river or a railroad. However, it does not account for jogs that might be necessary for avoiding unknown conditions.

Pipe Unit Cost. Estimated unit cost of pipeline is based on the pipe's present day cost in addition to installation cost, new pavement or pavement restoration, traffic control, bore-and-jack installation (where applicable), mobilization and demobilization, and contractor's overhead and profit. The cost is expressed in dollars per linear foot ($/LF) of pipe length. In the case of jacked steel casings, the unit cost includes the carrier pipe inside the casing.

Other Infrastructure Facilities Costs. Estimated lump sum costs, in dollars, for the construction of infrastructure utilities, other than pipes. Pump stations, lift stations, and emergency generators.

Baseline Construction Cost

This is the total estimated construction cost, in dollars, of the proposed improvement: pipes, pump station, lift station, or emergency generators.

Estimated Construction Cost

Since knowledge about site-specific conditions of each proposed project is limited at the master planning stage, a fifteen (15) percent contingency was applied to the Baseline Construction Cost to account for unforseen events and unknown conditions.

The Estimated Construction Cost, in dollars, for the proposed improvement consists of the Baseline Construction Cost plus the Construction Contingency.

Capital Improvement Cost

Other project-related costs have been identified and estimated at fifteen (15) percent of the Estimated Construction Costs. These costs include engineering, administration, construction inspection, and legal costs.

The Capital Improvement Cost, in dollars, for each proposed improvement is the total of the Estimated Construction Cost (including contingency) plus the other costs discussed in the previous paragraph.

4.0 SEWER CONNECTION FEES ANALYSIS

Connection fees are charges, imposed by local agencies on new developments, for recovering the capital costs of public facilities needed to service those developments. These fees and charges must satisfy the provisions of California Government Code Section 66000 which went into effect on January 1, 1989. These provisions, for water and sewer connection fees, are also known as AB1600 provisions, referring to Assembly Bill 1600 that introduced the provision. The provisions, as they relate to water and sewer connection fees, dictate that the ".... charges do not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed...".

In 1990, the City Council adopted the 1989 Sewer Master Plan, which contains sewer connection fees required from developers for covering the cost of the proposed sewer utility infrastructure projects. Revenues generated from these fees are placed in the Sewer Revolving Fund, which is used exclusively for the construction of sewer system facilities, in accordance with Government Code Section 66000 and City Code Section 19A-40. Additionally, City staff adjust the fees annually in accordance with the Engineering News Record Construction Cost Index (ENR), as provided in Ordinance No. 1440.

In October 1997, the City retained Carollo Engineers to update both the water and sewer master plans and develop capital improvement programs for the revised urban area boundary. In order to continue to meet the intent of AB 1600, the City also requested that connection fees be reviewed and adjusted, if necessary, to reflect the cost difference between the 1989 Master Plan estimates and the actual construction cost of projects constructed since the previous master plan.

Table 6.1 Capital Improvement Program
City of Porterville Sewer System Master Plan

Type of Improv.	Street	Limits	Pipeline and Assoc. Costs: Diam.[5] (in)	Length (ft)	Unit Cost ($)	Pipe Cost ($)	Other Infrastr. Costs ($)	Baseline Constr. Cost ($)	Estimated Constr. Cost[3] ($)	Capital Improv. Cost[4] ($)
Improvements to Correct Existing Deficiencies										
Pump Upgrade[2]	Newcomb Street (PS-4)	n/o West North Grand Ave. (2x550gpm)					21,000	21,000	24,150	28,000
Pump Upgrade[2]	Putnam Ave (PS-5)	at Mathew St (2x250gpm)					13,000	13,000	14,950	17,000
Pump Upgrade[2]	Morton Ave (PS-9)	at Westwood St (2x770gpm)					24,000	24,000	27,600	32,000
										77,000
Expansion Improvements (2000 - 2005)										
Pipe	Jaye St	St Highway 190 to Springville Ave	21	1,000	108	108,150		108,150	124,373	143,000
Casing[6]	Jaye St	Cross St Highway 190	21/39	300	337	100,980		100,980	116,127	134,000
Pipe	Main St	St Highway 190 to Vandalia Ave	18	650	97	62,920		62,920	72,358	83,000
Casing[6]	Main St	Cross St Highway 190	18/36	150	289	43,395		43,395	49,904	57,000
Pipe	St Highway 190	Jaye St to E St	21	2,200	113	249,260		249,260	286,649	330,000
Pipe	St Highway 190	E St to Main St	18	1,100	97	106,480		106,480	122,452	141,000
Pipe	Vandalia Ave	Main St to Plano St	18	2,640	97	255,552		255,552	293,885	338,000
Pipe	Morton Ave	Mathew St to Newcomb St	18	2,640	97	255,552		255,552	293,885	338,000
Pipe	Newcomb St	Grand Ave to Henderson Ave	30	1,300	209	271,700		271,700	312,455	359,000
Pump Upgrade[2]	Newcomb St (PS-3)	North of Mulberry (2x2,500gpm)					55,000	55,000	63,250	73,000
Pipe	Grand Ave	Prospect St to St Highway 65	27	1,320	172	227,040		227,040	261,096	300,000
Pipe	Grand Ave, ext	w/o Prospect to Prospect	27	750	172	129,000		129,000	148,350	171,000
Pipe	Grand Ave, ext	Treatment Plant to w/o Prospect	21	800	113	90,640		90,640	104,236	120,000
Pipe	Pioneer Ave, ext	ext Mathew St to Newcomb St	15	2,640	80	211,992		211,992	243,791	280,000
Lift Station[1]	Pioneer Ave, ext (NEW)	at ext Mathew St (2x500gpm)					360,000	360,000	414,000	476,000
										3,343,000
Expansion Improvements (2005 - 2010)										
Pipe	Newcomb St	Hope Dr to Scranton Ave	18	2,100	97	203,280		203,280	233,772	269,000
Lift Station[1]	Morton Ave, ext (NEW)	at ext Elderwood St (2x600gpm)					410,000	410,000	471,500	542,000
Pump Upgrade[2]	Morton Ave (PS-9)	at Westwood (2x1,200gpm)					32,000	32,000	36,800	42,000
Pipe	Newcomb St	W. North Grand Ave to Linda Vista Ave	15	2,640	80	211,992		211,992	243,791	280,000

Table 6.1 Capital Improvement Program
City of Porterville Sewer System Master Plan

Type of Improv.	Street	Limits	Pipeline and Assoc. Costs				Other Infrastr. Costs ($)	Baseline Constr. Cost ($)	Estimated Constr. Cost[3] ($)	Capital Improv. Cost[4] ($)
			Diam.[5] (in)	Length (ft)	Unit Cost ($)	Pipe Cost ($)				
Lift Station[1]	Newcomb St (NEW)	at Linda Vista Ave (2x500gpm)					360,000	360,000	414,000	476,000
Pump Upgrade[2]	Newcomb St (PS-15)	South of Tule River (2x6,100gpm)					136,000	136,000	156,400	180,000
Pipe	Henderson Ave	Plano St to ext Leggett St	12	2,700	65	175,230		175,230	201,515	232,000
Casing[6]	Grand Ave	Cross St Highway 65	27/45	300	447	133,980		133,980	154,077	177,000
Pipe	Grand Ave	Porter St to Palm St	24	4,000	135	540,000		540,000	621,000	714,000
Pipe	Grand Ave	Palm St to G St	24	650	135	87,750		87,750	100,913	116,000
Pump Upgrade[2]	Porter Rd (PS-2)	South of Henderson (2x825gpm)					27,000	27,000	31,050	36,000
										3,064,000
Expansion Improvements (2010 - 2015)										
Pipe	Grand Ave, ext	Newcomb St to Treatment Plant	45	1,200	347	415,800		415,800	478,170	550,000
Pipe	Newcomb St	Olive Ave to Thurman Ave	Relief 27	2,100	172	360,360		360,360	414,414	477,000
Pipe	Newcomb St	Thurman Ave to Morton Ave	Relief 30	660	209	137,940		137,940	158,631	182,000
Pipe	Newcomb St	Morton Ave to Grand Ave	Relief 30	1,200	209	250,800		250,800	288,420	332,000
Pipe	w/o Main St, along RR	W. North Grand to Reid St. Extension	12	1,500	65	97,350		97,350	111,953	129,000
Pipe	Reid St. Extension	RR to Main St. and contin. Eastward	12	2,100	65	136,500		136,500	156,975	181,000
Pipe	Belmont St	Henderson Ave to Mulberry Ave	15	1,320	80	105,996		105,996	121,895	140,000
Pipe	Henderson Ave	Belmont St to Newcomb St	15	1,500	80	120,450		120,450	138,518	159,000
Pump Upgrade[2]	Newcomb St (PS-4)	north of West Grand (2x1,600gpm)					41,000	41,000	47,150	54,000
Pipe	Westfield Ave	between Westwood St to Mathew St	12	400	65	25,960		25,960	29,854	34,000
Pipe	Grand Ave	East of Plano St	15	800	80	64,240		64,240	73,876	85,000
Pipe	Henderson Ave	Second St to Plano St	24	2,050	135	277,365		277,365	318,970	367,000
Casing[6]	Henderson Ave	Cross Santa Fe Railroad	24/42	60	383	22,968		22,968	26,413	30,000
Pipe	Plano St	Henderson Ave to Olivewood Cr	15	900	80	72,270		72,270	83,111	96,000
Pipe	Plano St	Grand Ave to Henderson Ave	15	1,300	80	104,390		104,390	120,049	138,000
Pipe	Leggett St	Morton Ave to Grand Ave	15	1,200	80	96,360		96,360	110,814	127,000
Pipe	Newcomb St	Hope Dr, South of	15	1,320	80	105,996		105,996	121,895	140,000
Pipe	Scranton Ave	Newcomb St to ext Crystal St	18	2,640	97	255,552		255,552	293,885	338,000
Pipe	Scranton Ave	ext Crystal St to St Highway 65	15	1,800	80	144,540		144,540	166,221	191,000
Pump Upgrade[2]	Putnam (PS-5)	at Mathew (2x500gpm)					21,000	21,000	24,150	28,000
Pipe	Newcomb St	North of Mulberry Ave	21	500	113	56,650		56,650	65,148	75,000

Table 6.1 Capital Improvement Program

City of Porterville Sewer System Master Plan

Type of Improv.	Street	Limits	Pipeline and Assoc. Costs				Other Infrastr. Costs ($)	Baseline Constr. Cost ($)	Estimated Constr. Cost[3] ($)	Capital Improv. Cost[4] ($)
			Diam.[5] (in)	Length (ft)	Unit Cost ($)	Pipe Cost ($)				
Pipe	Yates Ave	Main St to Roche St	12	1,800	65	116,820		116,820	134,343	154,000
Pump Upgrade[2]	Airport (PS-7)	at Airport (2x500gpm)					21,000	21,000	24,150	28,000
Pump Upgrade[2]	Mulberry (PS-11)	at Mathew (2x370gpm)					16,000	16,000	18,400	21,000
										4,056,000

Notes:

1. Lift Station cost estimated using Pump Station Design by Robert L. Shanks.
2. Pump pricing can vary widely with site conditions.
3. Baseline Construction costs plus 15% to account for unforseen events and unknown conditions.
4. Estimated Construction Cost plus 15% to cover other costs including; engineering, administration, construction inspection, and legal costs. (Rounded to the nearest thousand)
5. Proposed replacement pipe size unless noted otherwise. "Relief" indicates a new parallel pipe to relieve the existing pipe (which will remain in service).
6. Proposed casings size and carrier pipe size.

Adjusted Cost of 1990-1995 Capital Improvements

The period starting August 7, 1990 and ending August 6, 1995 was selected as the five-year review period for tracking the estimated capital costs of the 1989 Master Plan and comparing them with the actual project costs. The review period start date (August 7, 1990) coincides with the date the Council adopted a resolution to implement the 1989 Master Plan fees.

The 1989 Mater Plan projects that were constructed within the five-year review period have been identified by City staff and are summarized in Table 6.2. Whenever the actual constructed projects differed from the 1989 Master Plan project, adjustments were made to provide an equitable comparison of costs. The adjustments were accomplished after a review of the project "as-built" drawings and following discussions with City staff.

As Table 6.2 shows, some actual constructed projects extended beyond the 1989 Master Plan projects while others constituted a portion of the master plan project. The costs of the 1989 master plan were thus adjusted proportionally.

The 1989 Master Plan projects costs reflect the 20-cities ENR index of 4646. The adjusted Master Plan projects, equating to the actual constructed projects, were escalated up from ENR 4646 to the construction midpoint of the constructed projects, using the same 20-cities ENR index. The ENR index of each project is also listed in Table 6.2.

A comparison of costs between the escalated Master Plan projects and the constructed projects was then performed and the differences recorded in the last two columns of Table 6.3. The second to last column represents the difference, in dollar amount, while the last column represents an equivalent percentage difference from the 1989 Master Plan cost. A negative difference value indicates that the actual project was constructed more efficiently than anticipated, while a positive difference indicates that the project cost more than anticipated.

Some more specific considerations in determining the cost comparisons are as follows:

- If the constructed project corresponded directly to a specific segment between two or more nodes in the 1989 Master Plan, the latter cost estimates (after ENR escalation) and the actual construction costs were compared directly irrespective if the two lengths differed slightly.
- The master plan estimate and the actual construction costs were also compared directly if the constructed project accomplished the intent of the 1989 Master Plan between any two nodes (i.e., the constructed project may have deviated from the master plan route or a pump station and force main was substituted for a gravity pipeline).

Table 6.2 Updated Costs of 1990-1995 Capital Improvements
City of Porterville Sewer System Master Plan

Sewer Project No.	Project Name	89MP Pipe Nos.	Project Bid Date	Council Acceptance Date	Project ENR Date [1]	Project ENR	89MP Pipe Length (ft)	89MP Pipe Cost Estimate ($)	89MP Estimate of Pipe Constructed In Total Project ($)	ENR Update of 89MP Estimate of Pipe Constructed ($)	Actual Length of Pipe Constructed In Total Project (ft)	Cost of Total Project ($)	Portion of 89MP Pipe Constructed In Total Project [2] (ft)	Actual Cost of Pipe Constructed In Total Project ($)	Differential Between Actual Cost and 89MP Cost (15:13) ($)	(%)
1	East Olive Avenue	EPO-EP6	Mar-91	Dec-91	Jun-91	4818	5,285	218,000	218,000	224,712	7,279	216,690	all	216,690	8,022	-4%
2	Linda Vista	LVI-LV13	Jul-90	Apr-91	Dec-90	4769	11,660	536,760	536,760	595,037	9,895	579,690	all	579,690	15,347	-3%
3	Highway 190	EZNCM-EZ16	Jul-90	Jul-91	Dec-90	4769	16,770	1,080,831	1,080,831	2,008,165	16,527	1,956,371	all	1,956,371	51,794	-3%
4	Morton Leggett	HCO-HC2	Mar-90	Jul-90	Apr-90	4716	3,770	165,150	165,150	165,368	3,686	162,913	all	162,913	2,455	-2%
5	Airport Sewer Main	APE75-APA-LS	Aug-91	Apr-92	Nov-91	4877	15,630	1,048,770	1,048,770	754,315	12,626	718,587	all	718,587	35,728	-5%
6	Porter Creek Estate #1	NNWW1-NNWW1E2	Sep-93	Apr-94	Dec-93	5310	2,880	134,640	$134,640	143,505	4,004	$186,540	2,695	$125,560	17,945	-14%
7	Chelsea Glen Subdivision	LV3LK-LV3N1	Feb-94	Sep-94	May-94	5392	1,320	44,880	$44,880	90,310	1,889	$77,815	all	$77,815	12,495	-16%
TOTALS									**$3,229,000**	**$3,981,000**				**$3,838,000**	**$144,000**	**-4%**

Notes:

1. Assumed it took one month from job closing to council acceptance and the ENR date was mid point of the construction period.
2. "All" assumed the total pipe constructed met the MP objectives of the pipe shown between the MP nodes in column 8 even though it may have taken a different route or was not the same length.
3. Master Plan ENR: October 1989-
4. Highway 190 - Lift station constructed but no lift station shown on MP plus an expensive suspension bridge not in the MP was built.
5. Morton - Pipeline used different route but seemed to meet the objectives of the MP.
6. Airport - Pipeline took different route within the airport but seemed to meet the objectives of the MP. Also one length of pipe was an error in MP.
7. Porter - Not the same project as MP but met the objectives of the MP project. Also force main along Westfiled and pump station on Westfield and Westward mentioned in MP but no costs were included.
8. Chelsea - Length of MP pipe was an error which caused lower MP estimate.

- If only a portion of a project between any two nodes was constructed, the master plan estimate was reduced by the ratio of the actual constructed pipe length to the estimated master plan length of pipeline between nodes.
- If the project extended beyond the master plan project, the constructed cost was reduced by the ratio of the actual length of pipeline constructed (taken from as-built drawing) to the total length of the constructed pipeline.
- When a pipeline was constructed where a master plan pipe was shown on the master plan drawing but was inadvertently left out of the 1989 cost estimate, this segment was considered not in the master plan as its cost was not a part of the 1989 fee determination.
- Where a pipeline in the master plan was shown to extend the total distance between two nodes but the distance given was inadvertently shown as only a part of the distance between nodes, the constructed cost of the whole distance was still compared to the cost estimate shown for the pipeline between these two nodes as this was the cost estimate used in the fee determination to accomplish that project.

Recommended Connection Fees

There were seven sewer projects that were approved by City staff and Council during the five-year period starting August 7, 1990 and ending August 6, 1995 as shown on Table 6.2. The difference in cost shows a saving of $144,000 (4%)compared to the 1989 Sewer Master Plan estimates.

The Capital Improvement Program costs estimated for the period ending in year 2015 constitute approximately $11,000,000. The connection fee analysis presented in Table 6.3 included applying an adjustment (credit), as discussed in the previous section, as well as considering the current balance in the Sewer Revolving Fund. Following discussions with City staff, and based on the assumptions presented in this section, it was determined that the Sewer Connection Fees do not need to be changed at this time.

Table 6.3 Revised Sewer Connection Fees
City of Porterville Sewer System Master Plan

Land Use	Expansion Area			Base Alternative - Existing Fees			Proposed Revisions to Fees (none)			
	2000-2015[1]		Adjusted	1999/2000	Collected CIP Fees		Proposed		Collected CIP Fees	
	Area (acres)	% of Total (%)	Area[3] (acres)	Fees[4] ($/acre)	Amount[6] ($)	% of Total (%)	Fees[5] ($/acre)	% Increase[8] (%)	Amount[7] ($)	% of Total (%)
R-Hillside[2]	1,400	23%	1,260	2,130	2,982,000	22%	700	0%	980,000	9%
R-1	2,200	37%	1,980	1,300	2,860,000	21%	1,300	0%	2,860,000	25%
R-2	50	1%	45	3,023	151,150	1%	3,023	0%	151,150	1%
R-3 $ R-4	70	1%	63	7,052	493,640	4%	7,052	0%	493,640	4%
Institutional	1,200	20%	1,080	490	588,000	4%	490	0%	588,000	5%
Commercial	360	6%	324	1,838	661,680	5%	1,838	0%	661,680	6%
Industrial	720	12%	648	7,846	5,649,120	42%	7,846	0%	5,649,120	50%
Total	6,000	100%	5,400		**13,385,590**	100%			**11,384,000**	91%

Adjustments to reflect 1990-1995 CIP Costs Update	
2000-2015 CIP Costs (Table 6.1)[9]	10,460,000
1990-1995 CIP Update/Credit (Table 6.2)[10]	-144,000
Balance in Sewer Revolving Funds (January 2001)	-1,600,000
2000-2015 CIP Fees (needed to be collected)[11]	**8,716,000**

Notes:

1. Expansion Improvements within the UDB, through the planning horizon year of 2015
2. The Hillside Residential Zone, as defined by City Planning, allows up to 1 dwelling unit per 3 acres.
3. Areas adjusted to 90% of gross acreages, to account for potentially undevelopable acreages within the expansion zone.
4. Connection Fees, effective July 1, 2000
5. Proposed adjustment to Connection Fees to cover the cost of future Improvements.
6. Projected CIP fees collected based on the 1998/1999 Connection Fees, in dollars.
7. Projected CIP fees collected based on the proposed adjusted Connection Fees, in dollars
8. Proposed adjustment to Connection Fees, in percent.
9. Estimated CIP costs for expansions between 1998-2020 (see Table 6.1), in dollars.
10. Adjustment to CIP costs, based on update of 1989 master plan costs (see Table 6.2), in dollars.
11. CIP that needs to be collected for the expansion improvements, less the credit based on the 1990-1995 CIP update analysis, less the balance in the Sewer Revolving Funds.

Last Revised: February 2001

Appendices

Appendices

Appendix A

FLOW MONITORING PROGRAM

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_01
Pipe Dimensions: 26.50" X 26.50"
Newcomb St. North of Henderson
Porterville, CA

VERT PIPE HEIGHT: 26.50 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 6.023 - 6.023

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.131	0.114	0.148	0.174	0.148	0.159	0.193
1:00	0.109	0.105	0.109	0.133	0.127	0.049	0.063
2:00	0.111	0.029	0.115	0.116	0.086	0.117	0.121
3:00	0.101	0.105	0.111	0.037	0.045	0.016	0.093
4:00	0.107	0.030	0.026	0.116	0.103	0.106	0.050
5:00	0.088	0.103	0.109	0.058	0.071	0.111	0.105
6:00	0.221	0.200	0.115	0.074	0.202	0.199	0.251
7:00	0.430	0.441	0.242	0.147	0.392	0.440	0.407
8:00	0.455	0.388	0.274	0.360	0.344	0.412	0.409
9:00	0.304	0.282	0.455	0.357	0.273	0.306	0.303
10:00	0.291	0.288	0.470	0.462	0.260	0.264	0.256
11:00	0.223	0.264	0.464	0.446	0.266	0.237	0.284
12:00	0.233	0.223	0.414	0.444	0.268	0.229	0.207
13:00	0.223	0.217	0.362	0.340	0.272	0.167	0.178
14:00	0.182	0.182	0.284	0.305	0.245	0.253	0.235
15:00	0.202	0.191	0.270	0.408	0.197	0.164	0.168
16:00	0.212	0.246	0.373	0.314	0.179	0.237	0.247
17:00	0.222	0.248	0.333	0.305	0.258	0.238	0.249
18:00	0.323	0.322	0.334	0.304	0.293	0.332	0.318
9:00	0.396	0.321	0.313	0.399	0.364	0.337	0.338
20:00	0.354	0.263	0.296	0.365	0.299	0.327	0.347
21:00	0.325	0.319	0.324	0.326	0.384	0.353	0.343
22:00	0.319	0.209	0.262	0.305	0.310	0.338	0.280
23:00	0.223	0.198	0.201	0.247	0.218	0.190	0.212

TOT FLOW(mg):		0.241		0.219		0.267		0.273		0.234		0.233		0.236
AMMIN FLW:	05:20	0.015	05:05	0.008	04:50	-0.000	05:05	0.003	05:45	0.015	03:55	0.003	05:20	0.008
MIN FLOW:	05:20	0.015	05:05	0.008	04:50	-0.000	05:05	0.003	05:45	0.015	03:55	0.003	05:20	0.008
MAX FLOW:	08:00	0.794	07:40	0.857	10:40	0.866	11:45	0.871	07:30	0.796	07:20	0.798	07:55	0.904

SENSORS: TIME OF REPORT: 02/24/98 10:06:11 FLOW AVG FOR WEEK: 0.243 FLOW TOTAL FOR WEEK: 1.701
QFINAL

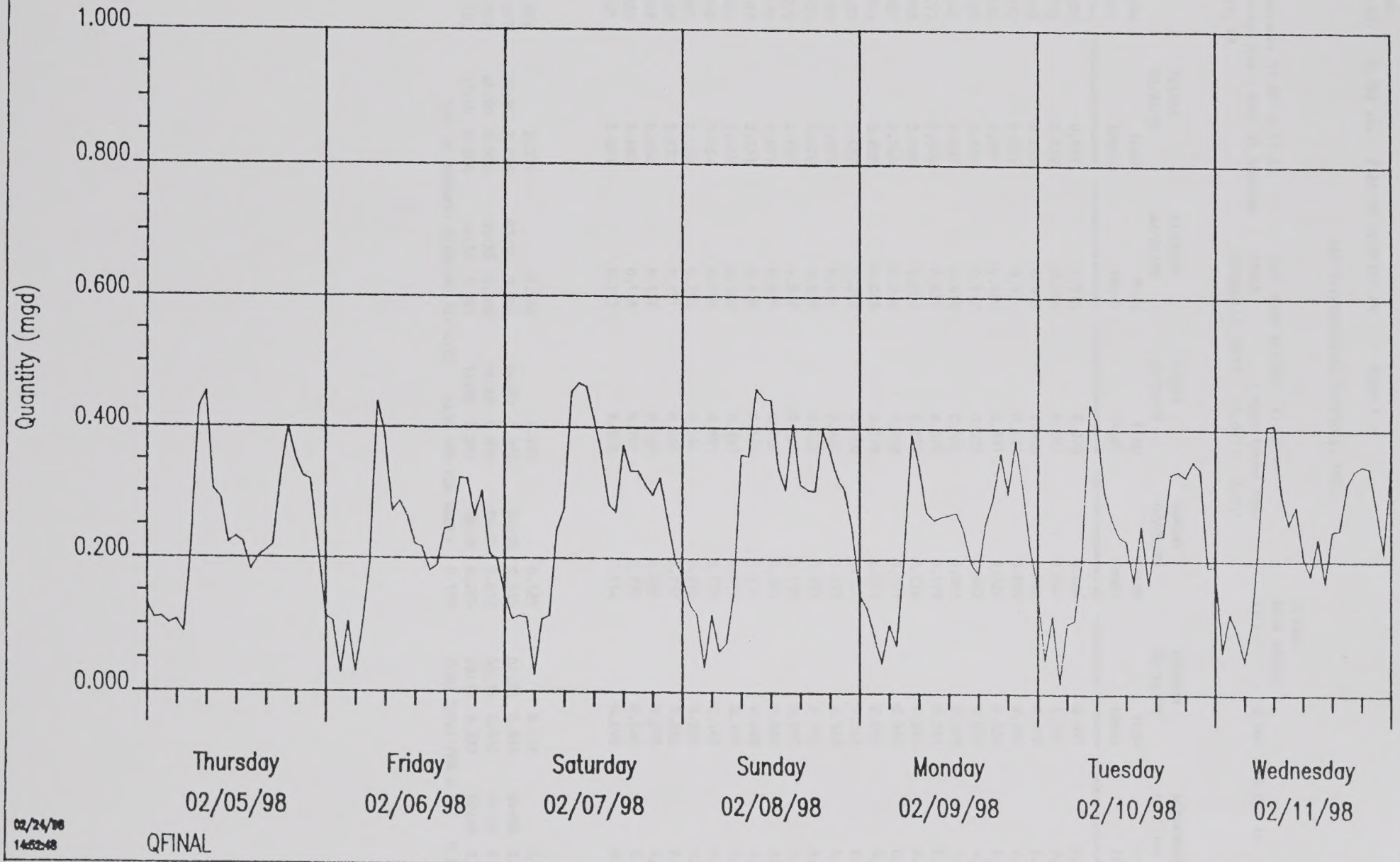
ADS ENVIRONMENTAL SERVICES, INC.

PV_01

Pipe Dimensions: 26.50" X 26.50"

Newcomb St. North of Henderson

Porterville, CA



02/24/98
14:52:48

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_02
Pipe Dimensions: 11.63" X 11.63
1630 Henderson Ave., West of Newcomb
Porterville, CA

VERT PIPE HEIGHT: 11.63 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 3.641 - 3.641

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.020	0.015	0.016	0.070	0.064	0.057	0.076
1:00	0.013	0.012	0.014	0.057	0.044	0.050	0.049
2:00	0.013	0.015	0.013	0.046	0.026	0.028	0.041
3:00	0.012	0.011	0.014	0.031	0.034	0.034	0.022
4:00	0.016	0.019	0.009	0.031	0.029	0.030	0.030
5:00	0.028	0.019	0.012	0.032	0.033	0.029	0.034
6:00	0.040	0.037	0.018	0.032	0.067	0.068	0.068
7:00	0.073	0.058	0.035	0.070	0.179	0.211	0.234
8:00	0.058	0.038	0.056	0.132	0.216	0.261	0.224
9:00	0.037	0.045	0.066	0.228	0.141	0.162	0.171
10:00	0.036	0.030	0.063	0.278	0.151	0.082	0.128
11:00	0.033	0.037	0.059	0.269	0.144	0.143	0.094
12:00	0.030	0.030	0.084	0.269	0.135	0.140	0.118
13:00	0.030	0.020	0.930	0.222	0.122	0.093	0.129
14:00	0.028	0.026	1.012	0.200	0.119	0.082	0.087
15:00	0.032	0.021	0.825	0.205	0.083	0.085	0.078
16:00	0.039	0.031	0.198	0.160	0.111	0.093	0.108
17:00	0.065	0.049	0.180	0.187	0.117	0.105	0.116
18:00	0.048	0.061	0.190	0.181	0.179	0.160	0.186
19:00	0.058	0.038	0.202	0.196	0.216	0.223	0.192
20:00	0.049	0.032	0.171	0.204	0.217	0.222	0.214
21:00	0.049	0.042	0.132	0.189	0.202	0.200	0.200
22:00	0.030	0.033	0.118	0.157	0.170	0.166	0.176
23:00	0.021	0.021	0.113	0.132	0.114	0.095	0.104

TOT FLOW(mg):	0.036		0.031		0.189		0.149		0.121		0.118		0.119	
AMMIN FLW:	03:10	0.007	01:50	0.006	03:55	0.006	04:00	0.010	04:55	0.012	02:30	0.010	04:00	0.011
MIN FLOW:	03:10	0.007	01:50	0.006	03:55	0.006	04:00	0.010	04:55	0.012	02:30	0.010	04:00	0.011
MAX FLOW:	07:55	0.130	17:45	0.084	14:30	1.051	10:35	0.311	08:05	0.309	08:10	0.328	07:55	0.313

SENSORS: TIME OF REPORT: 02/24/98 10:14:53 FLOW AVG FOR WEEK: 0.109 FLOW TOTAL FOR WEEK: 0.763

QFINAL

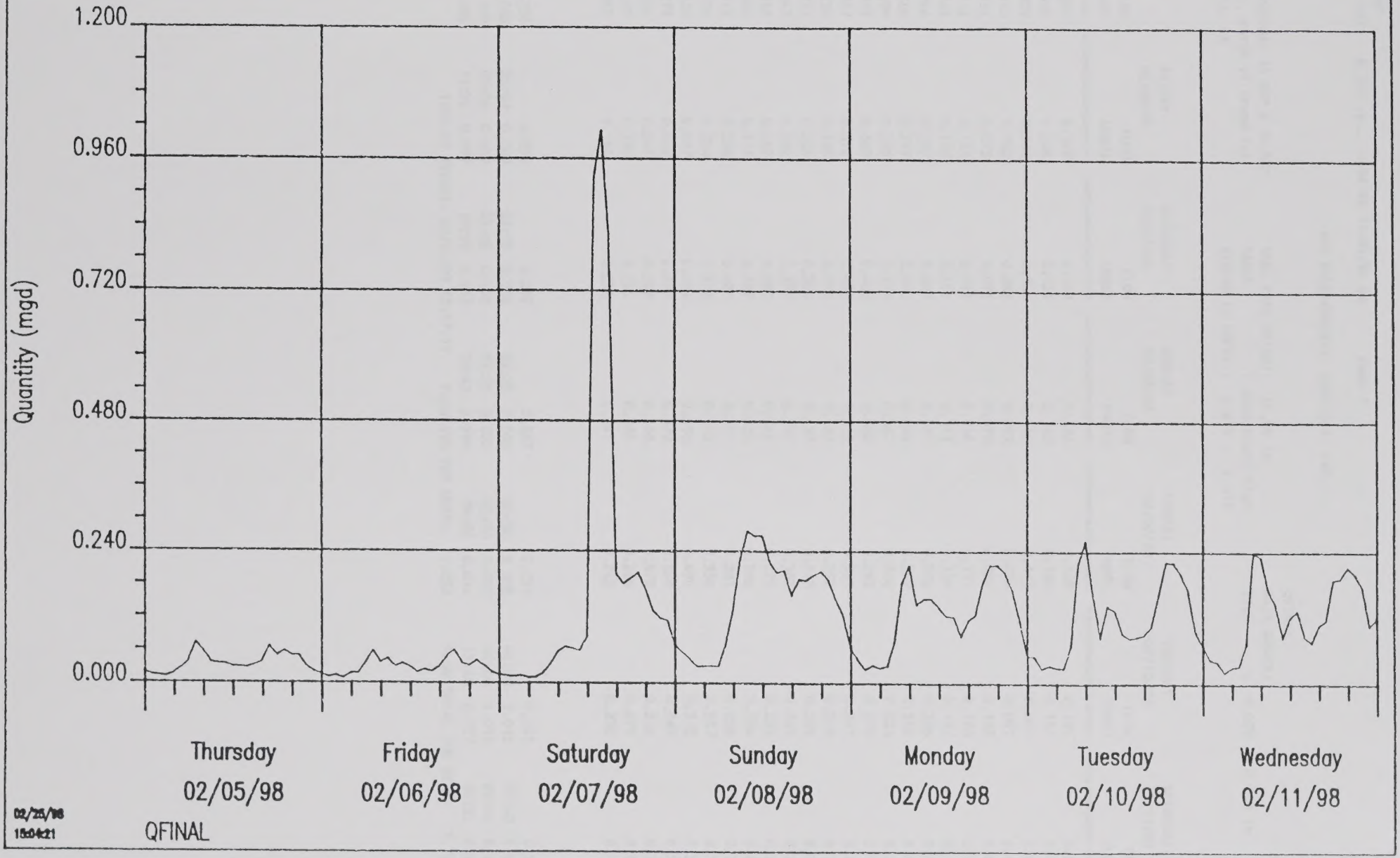
ADS ENVIRONMENTAL SERVICES, INC.

PV_02

Pipe Dimensions: 11.63" X 11.63

1630 Henderson Ave., West of Newcomb

Porterville, CA



02/25/98
15:04:21

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_03
Pipe Dimensions: 14.88" X 14.88"
Porter Rd., North of Grand Ave.
Porterville, CA

VERT PIPE HEIGHT: 14.88 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 2.613 - 2.613

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.081	0.147	0.142	0.124	0.169	0.155	0.082
1:00	0.125	0.142	0.131	0.142	0.100	0.152	0.105
2:00	0.139	0.041	0.101	0.112	0.112	0.079	0.052
3:00	0.116	0.080	0.082	0.099	0.074	0.097	0.089
4:00	0.134	0.073	0.073	0.070	0.089	0.128	0.086
5:00	0.143	0.123	0.111	0.114	0.111	0.108	0.110
6:00	0.163	0.149	0.151	0.113	0.158	0.182	0.147
7:00	0.396	0.250	0.098	0.187	0.272	0.306	0.310
8:00	0.366	0.377	0.294	0.286	0.349	0.345	0.300
9:00	0.279	0.270	0.392	0.367	0.264	0.336	0.252
10:00	0.352	0.360	0.422	0.406	0.295	0.259	0.310
11:00	0.347	0.372	0.434	0.312	0.321	0.291	0.239
12:00	0.230	0.285	0.375	0.436	0.272	0.248	0.333
13:00	0.357	0.304	0.304	0.437	0.318	0.285	0.251
14:00	0.242	0.282	0.337	0.337	0.307	0.261	0.236
15:00	0.212	0.467	0.280	0.343	0.279	0.238	0.252
16:00	0.299	0.311	0.327	0.323	0.306	0.236	0.259
17:00	0.318	0.336	0.407	0.331	0.301	0.288	0.317
18:00	0.308	0.354	0.372	0.343	0.330	0.357	0.328
19:00	0.323	0.427	0.204	0.336	0.490	0.312	0.365
20:00	0.379	0.327	0.387	0.370	0.333	0.367	0.365
21:00	0.285	0.307	0.253	0.300	0.378	0.336	0.289
22:00	0.287	0.220	0.251	0.281	0.266	0.275	0.302
23:00	0.253	0.114	0.236	0.247	0.212	0.230	0.159
TOT FLOW(mg):	0.256	0.255	0.257	0.267	0.254	0.245	0.231
AMMIN FLW:	03:15 0.020	03:00 0.009	03:05 0.006	05:25 0.005	02:30 0.008	04:00 0.015	03:40 0.008
MIN FLOW:	03:15 0.020	03:00 0.009	03:05 0.006	05:25 0.005	02:30 0.008	04:00 0.015	03:40 0.008
MAX FLOW:	09:55 0.605	14:55 0.597	10:55 0.647	10:40 0.596	19:30 0.614	13:40 0.557	20:35 0.553

SENSORS: QFINAL

TIME OF REPORT: 02/24/98 10:17:12 FLOW AVG FOR WEEK: 0.252 FLOW TOTAL FOR WEEK: 1.764

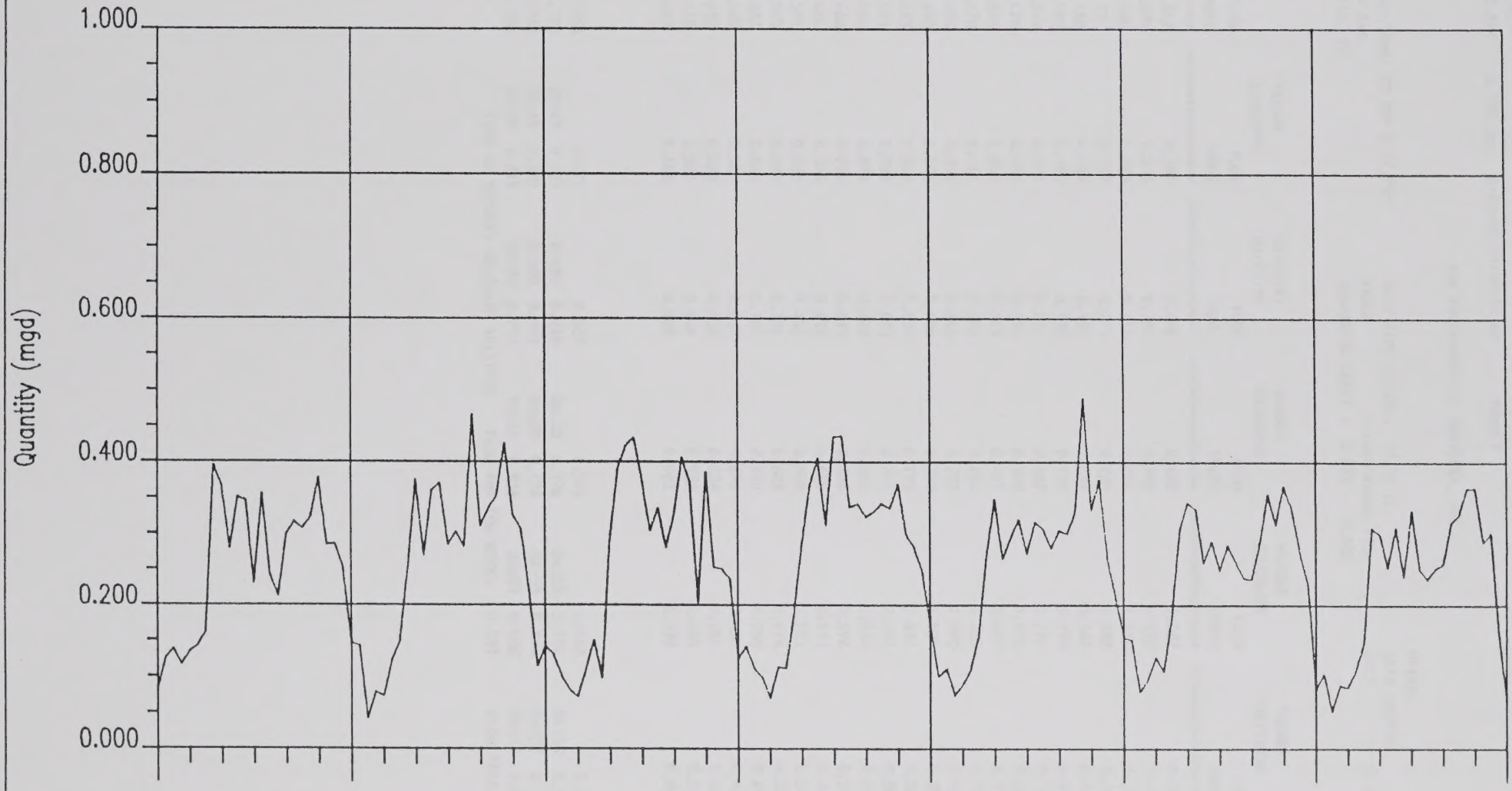
ADS ENVIRONMENTAL SERVICES, INC.

PV_03

Pipe Dimensions: 14.88" X 14.88"

Porter Rd., North of Grand Ave.

Porterville, CA



02/25/98
15:12:40

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_04
Pipe Dimensions: 17.75" X 17.75"
929 Grand Ave.
Porterville, CA

VERT PIPE HEIGHT: 17.75 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 3.383 - 3.383

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.367	0.392	0.428	0.420	0.397	0.595	0.379
1:00	0.279	0.316	0.282	0.305	0.252	0.471	0.261
2:00	0.209	0.220	0.250	0.254	0.210	0.311	0.242
3:00	0.187	0.169	0.211	0.223	0.188	0.267	0.206
4:00	0.168	0.180	0.195	0.231	0.164	0.197	0.184
5:00	0.182	0.195	0.178	0.210	0.179	0.321	0.197
6:00	0.294	0.294	0.211	0.207	0.275	0.508	0.305
7:00	0.476	0.496	0.312	0.340	0.470	0.661	0.492
8:00	0.636	0.648	0.472	0.457	0.629	0.714	0.609
9:00	0.670	0.671	0.592	0.656	0.763	0.757	0.672
10:00	0.635	0.596	0.646	0.787	0.590	0.660	0.590
11:00	0.540	0.540	0.685	0.759	0.581	0.556	0.553
12:00	0.533	0.546	0.639	0.771	0.614	0.536	0.561
13:00	0.501	0.555	0.681	0.745	0.582	0.569	0.560
14:00	0.458	0.559	0.629	0.660	0.520	0.514	0.511
15:00	0.466	0.524	0.615	0.630	0.596	0.500	0.522
16:00	0.465	0.564	0.615	0.655	0.511	0.484	0.525
17:00	0.501	0.580	0.652	0.618	0.531	0.500	0.514
18:00	0.553	0.620	0.724	0.625	0.674	0.534	0.535
19:00	0.637	0.642	0.701	0.610	0.765	0.635	0.662
20:00	0.663	0.585	0.667	0.674	0.856	0.657	0.742
21:00	0.612	0.562	0.622	0.626	0.785	0.627	0.625
22:00	0.612	0.521	0.648	0.558	0.805	0.578	0.551
23:00	0.489	0.483	0.508	0.502	0.738	0.507	0.467

TOT FLOW(mg):	0.464		0.477		0.507		0.522		0.528		0.529		0.478	
AMMIN FLW:	04:50	0.133	03:45	0.135	05:00	0.158	06:00	0.174	04:55	0.144	04:35	0.141	04:50	0.154
MIN FLOW:	04:50	0.133	03:45	0.135	05:00	0.158	06:00	0.174	04:55	0.144	04:35	0.141	04:50	0.154
MAX FLOW:	19:40	0.705	09:05	0.715	18:20	0.793	10:40	0.836	22:55	0.968	09:15	0.867	20:00	0.896

SENSORS: TIME OF REPORT: 02/24/98 10:17:28 FLOW AVG FOR WEEK: 0.501 FLOW TOTAL FOR WEEK: 3.504

QFINAL

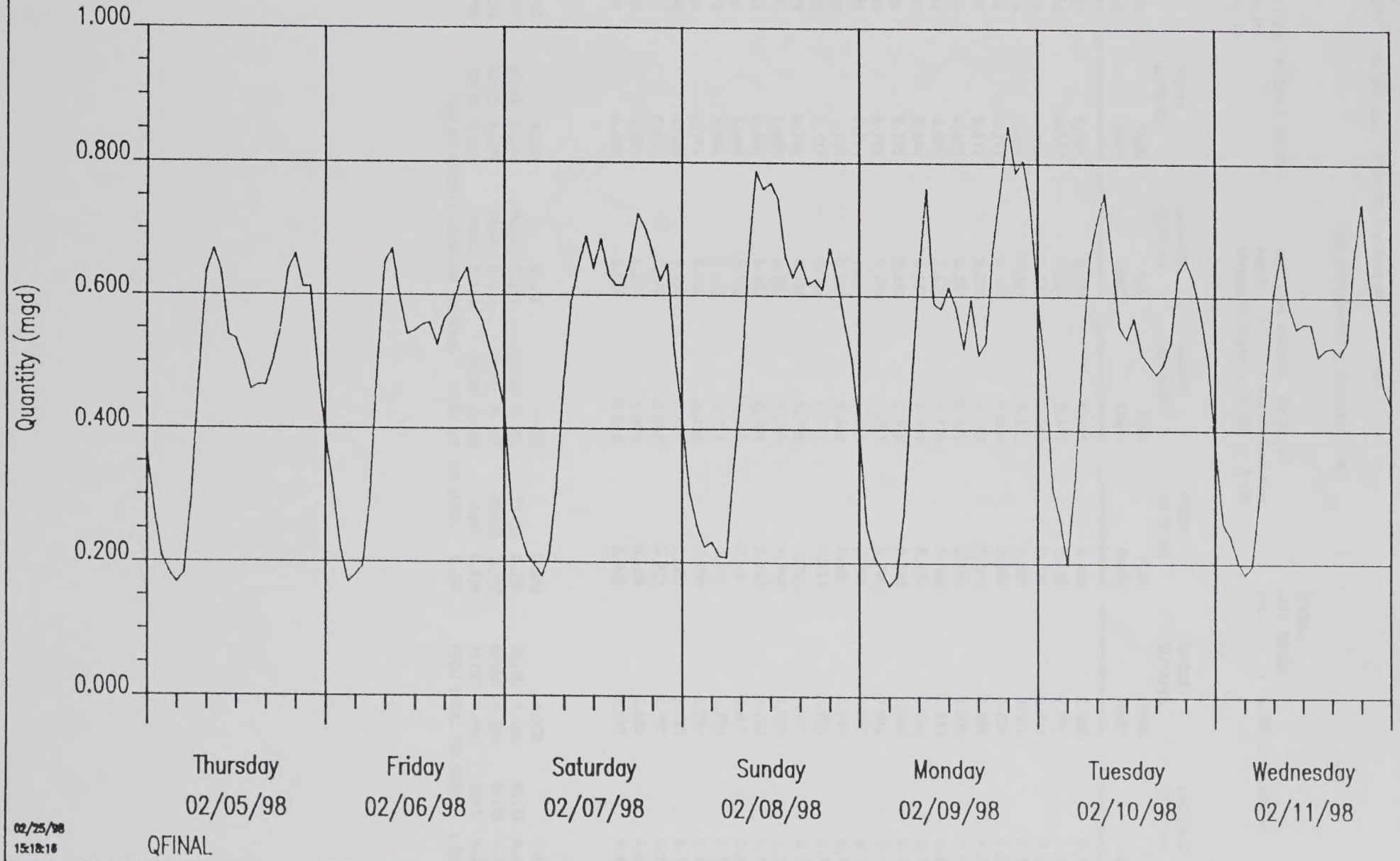
ADS ENVIRONMENTAL SERVICES, INC.

PV_04

Pipe Dimensions: 17.75" X 17.75"

929 Grand Ave.

Porterville, CA



02/25/98
15:18:18

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_05
Pipe Dimensions: 18.25" X 18.25"
1133 Morton Ave.
Porterville, CA

VERT PIPE HEIGHT: 18.25 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 3.785 - 3.785

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.462	0.453	0.516	0.485	0.498	0.488	0.505
1:00	0.359	0.367	0.424	0.419	0.405	0.396	0.398
2:00	0.316	0.305	0.362	0.363	0.329	0.331	0.345
3:00	0.314	0.289	0.343	0.335	0.305	0.320	0.324
4:00	0.302	0.291	0.320	0.304	0.299	0.294	0.305
5:00	0.298	0.314	0.324	0.297	0.346	0.286	0.326
6:00	0.370	0.401	0.356	0.324	0.403	0.376	0.400
7:00	0.512	0.532	0.421	0.376	0.522	0.533	0.519
8:00	0.690	0.694	0.521	0.508	0.699	0.744	0.741
9:00	0.720	0.775	0.670	0.658	0.763	0.840	0.775
10:00	0.695	0.755	0.776	0.757	0.798	0.832	0.757
11:00	0.725	0.799	0.811	0.811	0.823	0.802	0.749
12:00	0.696	0.791	0.791	0.842	0.821	0.770	0.743
13:00	0.663	0.737	0.783	0.797	0.811	0.735	0.737
14:00	0.675	0.744	0.789	0.798	0.806	0.702	0.733
15:00	0.671	0.664	0.730	0.780	0.756	0.689	0.711
16:00	0.667	0.640	0.722	0.723	0.722	0.702	0.710
17:00	0.663	0.669	0.756	0.687	0.686	0.681	0.668
18:00	0.672	0.654	0.827	0.710	0.708	0.731	0.738
9:00	0.724	0.711	0.905	0.732	0.755	0.742	0.777
20:00	0.698	0.686	0.774	0.804	0.802	0.750	0.779
21:00	0.672	0.637	0.676	0.802	0.721	0.707	0.728
22:00	0.643	0.605	0.615	0.703	0.678	0.666	0.661
23:00	0.562	0.602	0.557	0.614	0.602	0.597	0.586

TOT FLOW(mg):		0.574		0.588		0.615		0.610		0.627		0.613		0.613
AMMIN FLW:	05:10	0.273	03:45	0.271	04:45	0.291	05:50	0.281	03:50	0.282	04:30	0.260	04:15	0.286
MIN FLOW:	05:10	0.273	03:45	0.271	04:45	0.291	05:50	0.281	03:50	0.282	04:30	0.260	04:15	0.286
MAX FLOW:	11:35	0.790	12:10	0.840	19:20	0.960	12:00	0.882	12:05	0.876	11:00	0.940	20:15	0.829

SENSORS:
QFINAL

TIME OF REPORT: 02/24/98 10:17:42 FLOW AVG FOR WEEK: 0.606 FLOW TOTAL FOR WEEK: 4.240

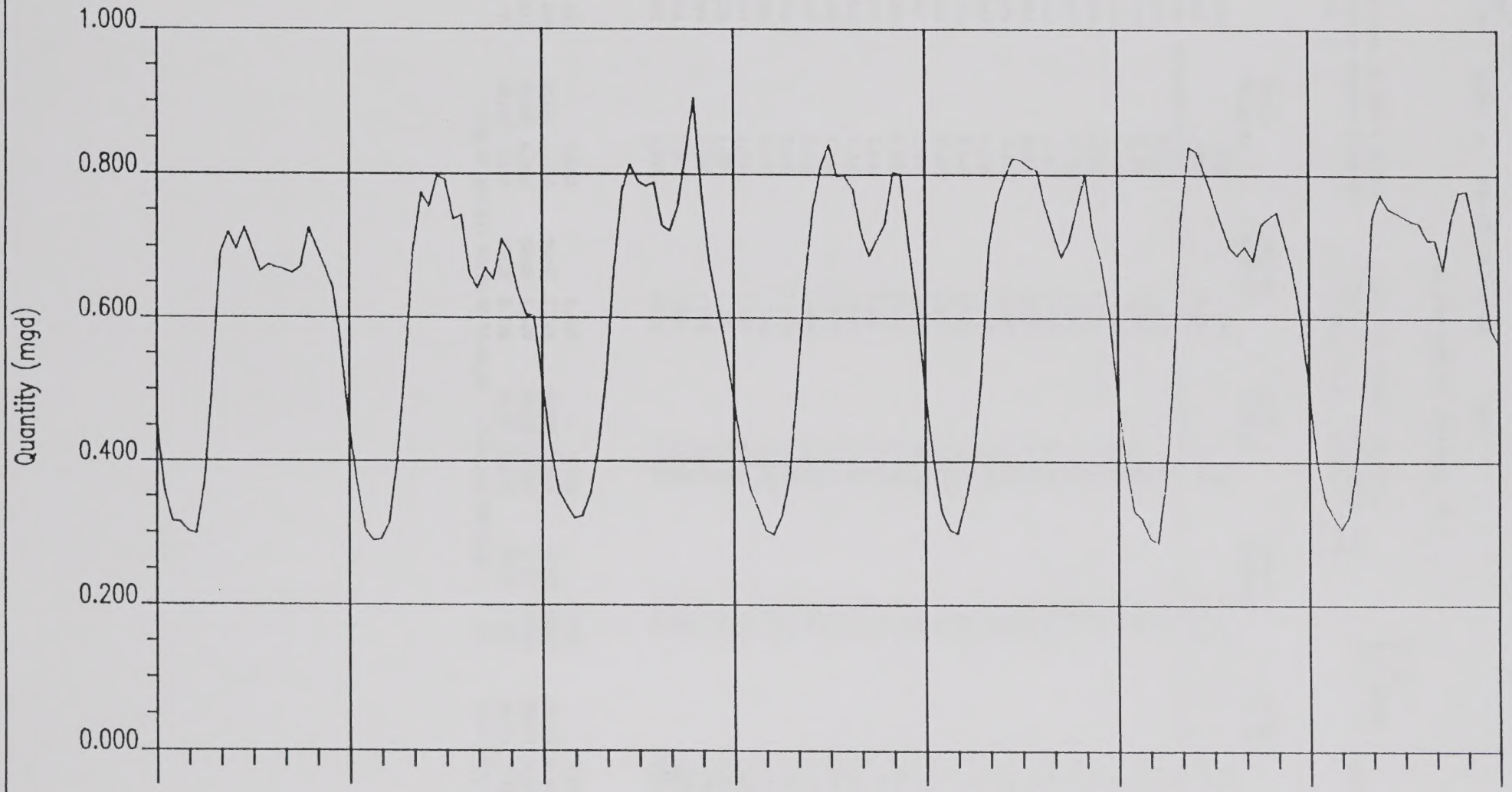
ADS ENVIRONMENTAL SERVICES, INC.

PV_05

Pipe Dimensions: 18.25" X 18.25"

1133 Morton Ave.

Porterville, CA



02/25/98
15:27:46

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_06
Pipe Dimensions: 27.50" X 27.50"
Intersection of Newcomb & Thurman
Porterville, CA

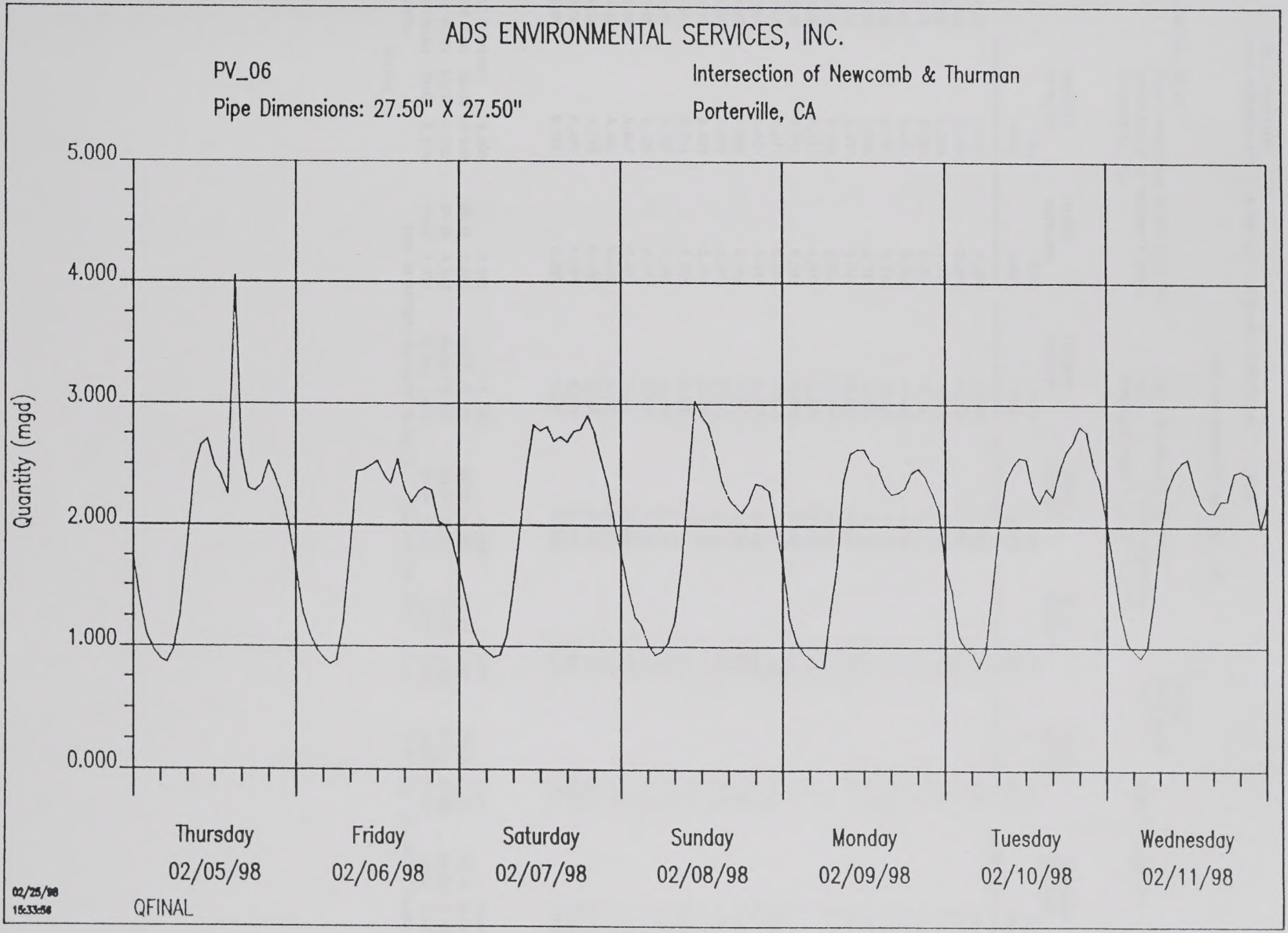
VERT PIPE HEIGHT: 27.50 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 2.776 - 2.776

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	1.758	1.655	1.617	1.778	1.705	1.667	2.022
1:00	1.377	1.295	1.388	1.480	1.231	1.456	1.648
2:00	1.101	1.108	1.115	1.252	1.073	1.087	1.278
3:00	0.978	0.982	1.002	1.188	0.960	0.993	1.043
4:00	0.897	0.905	0.963	1.025	0.901	0.953	0.975
5:00	0.866	0.852	0.909	0.930	0.850	0.830	0.895
6:00	0.981	0.889	0.908	0.962	0.825	0.969	1.006
7:00	1.279	1.203	1.097	1.039	1.286	1.480	1.398
8:00	1.833	1.792	1.459	1.219	1.661	2.005	1.940
9:00	2.414	2.447	1.977	1.677	2.380	2.385	2.311
10:00	2.654	2.457	2.457	2.332	2.598	2.497	2.448
11:00	2.707	2.491	2.829	3.030	2.634	2.570	2.528
12:00	2.496	2.531	2.778	2.902	2.634	2.552	2.562
13:00	2.411	2.416	2.811	2.822	2.528	2.294	2.340
14:00	2.242	2.343	2.687	2.624	2.485	2.181	2.193
15:00	4.049	2.546	2.729	2.368	2.338	2.302	2.124
16:00	2.601	2.302	2.684	2.232	2.261	2.242	2.112
17:00	2.308	2.184	2.774	2.162	2.275	2.461	2.216
18:00	2.282	2.272	2.789	2.106	2.310	2.614	2.217
19:00	2.341	2.318	2.905	2.196	2.440	2.690	2.446
20:00	2.528	2.287	2.771	2.354	2.479	2.828	2.465
21:00	2.399	2.030	2.543	2.336	2.407	2.773	2.433
22:00	2.243	1.997	2.341	2.290	2.281	2.505	2.290
23:00	2.002	1.869	2.018	1.980	2.134	2.362	1.982

TOT FLOW(mg):		2.031		1.882		2.065		1.928		1.945		2.029		1.953
AMMIN FLW:	04:05	0.640	05:00	0.606	06:05	0.649	06:25	0.655	05:20	0.600	05:40	0.679	05:20	0.667
MIN FLOW:	04:05	0.640	05:00	0.606	06:05	0.649	06:25	0.655	05:20	0.600	05:40	0.679	05:20	0.667
MAX FLOW:	15:05	5.177	15:40	3.067	19:35	3.178	11:10	3.448	10:10	2.902	20:25	3.216	10:05	2.851

SENSORS: TIME OF REPORT: 02/24/98 10:20:29 FLOW AVG FOR WEEK: 1.976 FLOW TOTAL FOR WEEK: 13.833
QFINAL


ADS ENVIRONMENTAL SERVICES, INC.
PV_06
Pipe Dimensions: 27.50" X 27.50"
Intersection of Newcomb & Thurman
Porterville, CA
5.000
4.000
3.000
2.000
1.000
0.000
Quantity (mgd)
Thursday
02/05/98
Friday
02/06/98
Saturday
02/07/98
Sunday
02/08/98
Monday
02/09/98
Tuesday
02/10/98
Wednesday
02/11/98
02/25/98
15:33:56
QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_07
Pipe Dimensions: 35.50" X 35.75"
Intersection of Newcomb & Clare
Porterville, CA

VERT PIPE HEIGHT: 35.50 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 2.798 - 2.798

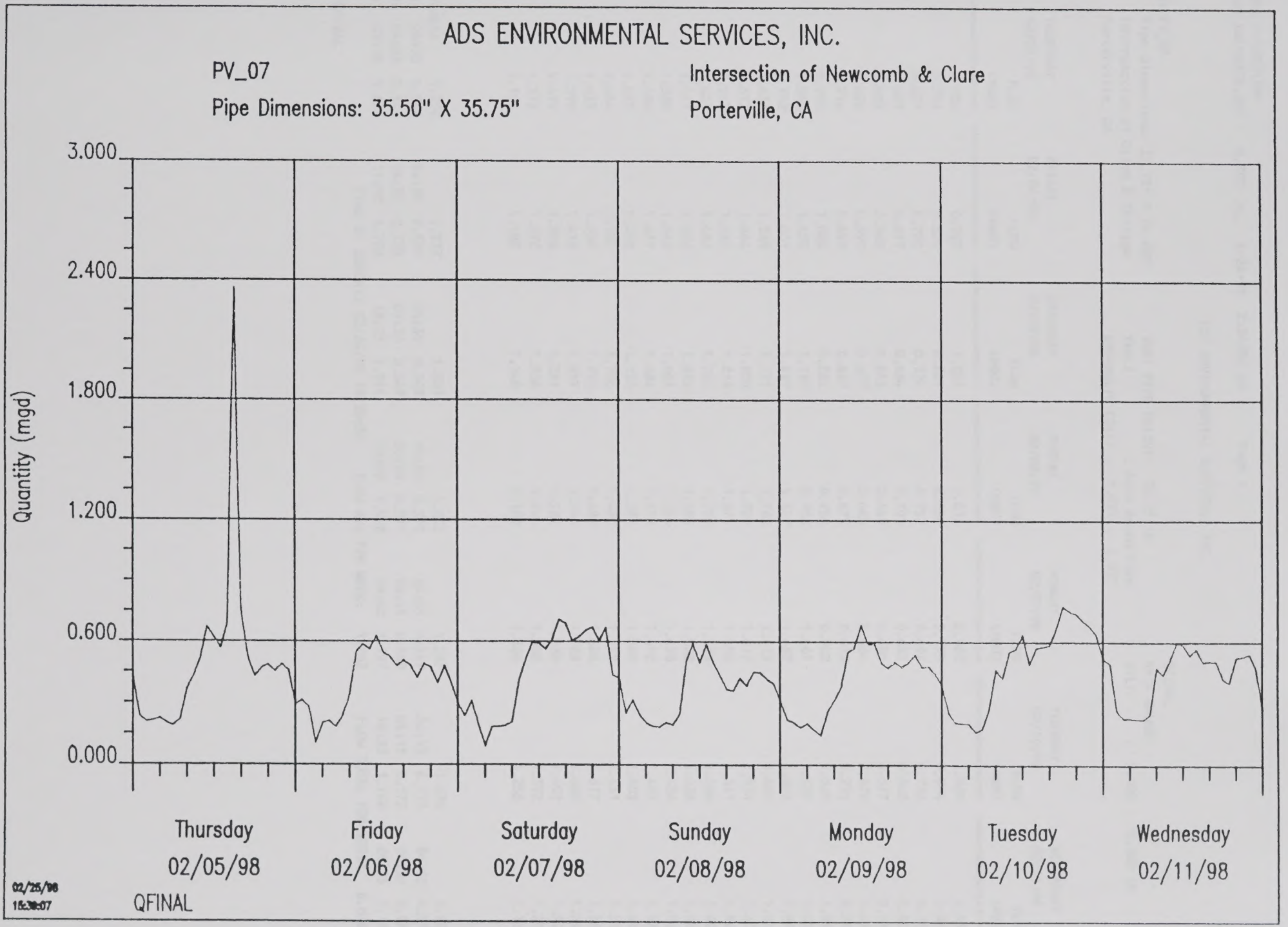
QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.417	0.289	0.294	0.415	0.305	0.382	0.517
1:00	0.230	0.311	0.231	0.244	0.217	0.251	0.492
2:00	0.203	0.274	0.308	0.314	0.204	0.204	0.264
3:00	0.209	0.101	0.192	0.240	0.178	0.203	0.225
4:00	0.220	0.200	0.088	0.203	0.199	0.200	0.227
5:00	0.197	0.210	0.182	0.184	0.204	0.146	0.225
6:00	0.186	0.181	0.184	0.181	0.141	0.175	0.220
7:00	0.217	0.236	0.189	0.204	0.255	0.272	0.246
8:00	0.366	0.334	0.207	0.192	0.312	0.464	0.473
9:00	0.431	0.545	0.406	0.243	0.374	0.419	0.436
10:00	0.516	0.586	0.508	0.503	0.547	0.551	0.511
11:00	0.671	0.559	0.593	0.592	0.572	0.567	0.597
12:00	0.620	0.627	0.593	0.494	0.684	0.636	0.589
13:00	0.563	0.543	0.561	0.588	0.586	0.487	0.534
14:00	0.688	0.523	0.611	0.497	0.588	0.570	0.567
15:00	2.359	0.476	0.710	0.434	0.494	0.578	0.499
16:00	0.756	0.507	0.689	0.364	0.469	0.583	0.505
17:00	0.520	0.480	0.599	0.356	0.501	0.666	0.503
18:00	0.425	0.417	0.623	0.420	0.474	0.776	0.418
19:00	0.467	0.491	0.653	0.380	0.497	0.753	0.398
20:00	0.484	0.470	0.672	0.451	0.537	0.739	0.522
21:00	0.450	0.392	0.602	0.450	0.471	0.704	0.531
22:00	0.488	0.479	0.668	0.413	0.477	0.677	0.541
23:00	0.454	0.393	0.435	0.393	0.440	0.632	0.467

TOT FLOW(mg):		0.506		0.401		0.450		0.365		0.405		0.485		0.438
AMMIN FLW:	05:10	0.003	05:15	0.003	04:55	0.005	06:25	0.006	06:35	0.009	05:25	0.004	06:20	0.008
MIN FLOW:	05:10	0.003	05:15	0.003	04:55	0.005	06:25	0.006	06:35	0.009	05:25	0.004	06:20	0.008
MAX FLOW:	15:00	3.779	15:30	1.154	16:10	1.054	13:50	1.016	20:50	1.098	18:45	1.599	14:35	1.419

SENSORS: TIME OF REPORT: 02/24/98 10:20:43 FLOW AVG FOR WEEK: 0.436 FLOW TOTAL FOR WEEK: 3.049

QFINAL


ADS ENVIRONMENTAL SERVICES, INC.
PV_07
Pipe Dimensions: 35.50" X 35.75"
Intersection of Newcomb & Clare
Porterville, CA
3.000
2.400
1.800
1.200
0.600
0.000
Quantity (mgd)
Thursday
02/05/98
Friday
02/06/98
Saturday
02/07/98
Sunday
02/08/98
Monday
02/09/98
Tuesday
02/10/98
Wednesday
02/11/98
02/25/98
15:38:07
QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

N: PV_08
Pipe Dimensions: 23.75" X 24.00"
Intersection of Olive & Cottage
Porterville, CA

VERT PIPE HEIGHT: 23.75 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 2.937 - 2.937

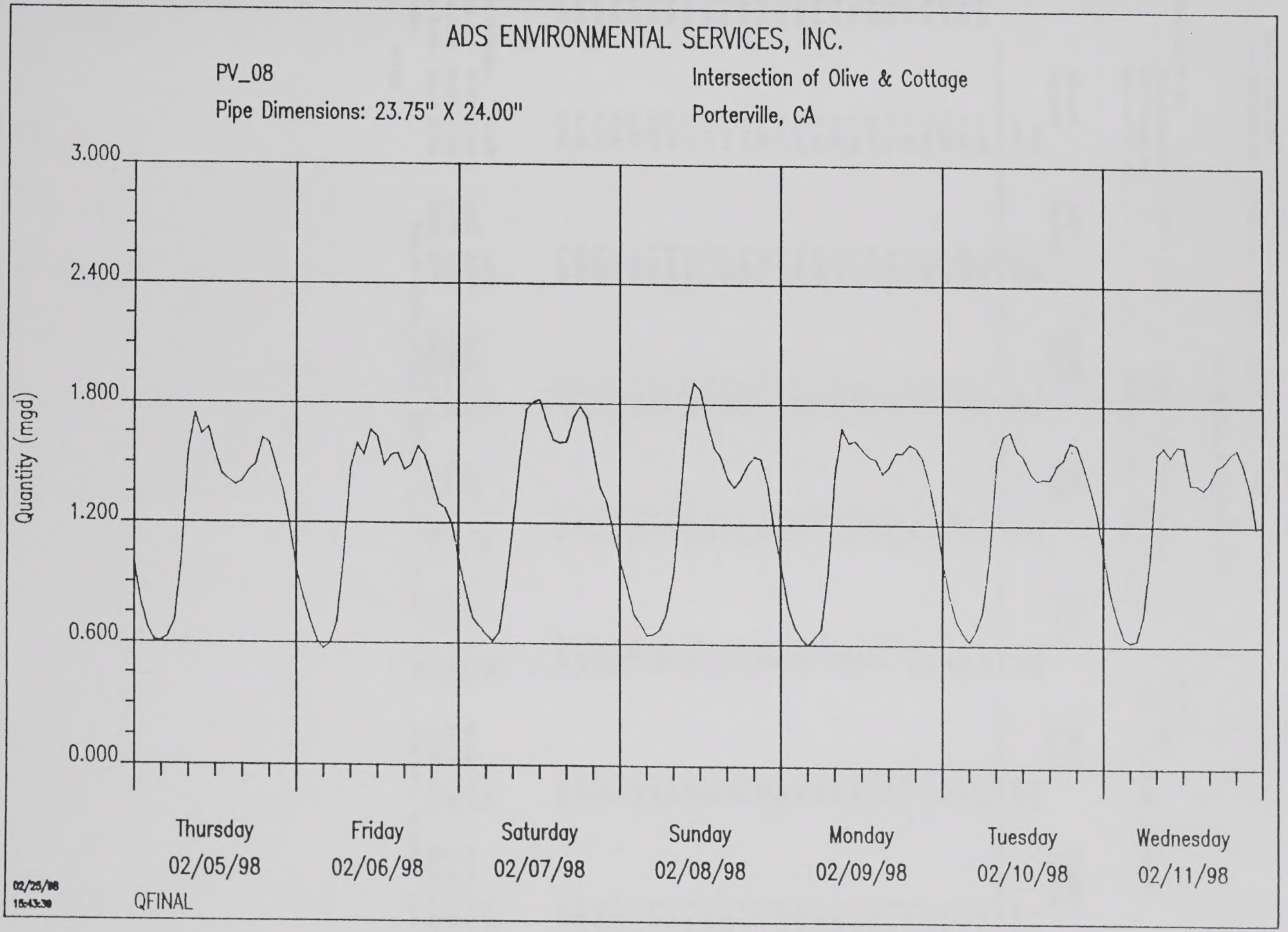
QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98	FRIDAY 02/06/98	SATURDAY 02/07/98	SUNDAY 02/08/98	MONDAY 02/09/98	TUESDAY 02/10/98	WEDNESDAY 02/11/98
	FLOW (mgd)	FLOW (mgd)	FLOW (mgd)	FLOW (mgd)	FLOW (mgd)	FLOW (mgd)	FLOW (mgd)
:00	0.986	0.967	1.023	1.014	0.982	1.009	1.057
:00	0.795	0.824	0.861	0.889	0.795	0.844	0.861
:00	0.671	0.720	0.729	0.752	0.692	0.726	0.737
:00	0.607	0.617	0.684	0.701	0.632	0.660	0.641
:00	0.603	0.569	0.643	0.640	0.606	0.617	0.619
:00	0.622	0.599	0.607	0.643	0.634	0.670	0.630
:00	0.716	0.699	0.657	0.675	0.678	0.771	0.751
:00	0.999	1.024	0.882	0.756	0.962	1.069	1.057
:00	1.562	1.452	1.187	0.958	1.461	1.529	1.525
:00	1.742	1.601	1.497	1.327	1.682	1.645	1.597
:00	1.636	1.539	1.771	1.763	1.613	1.669	1.545
:00	1.672	1.664	1.805	1.909	1.617	1.576	1.601
:00	1.542	1.626	1.818	1.871	1.580	1.541	1.597
:00	1.441	1.483	1.703	1.705	1.533	1.466	1.405
:00	1.411	1.536	1.615	1.581	1.528	1.428	1.409
:00	1.380	1.548	1.601	1.534	1.458	1.436	1.383
	1.404	1.461	1.604	1.428	1.492	1.427	1.427
	1.457	1.488	1.726	1.381	1.560	1.503	1.498
00	1.484	1.585	1.786	1.428	1.558	1.531	1.506
00	1.637	1.530	1.730	1.492	1.603	1.617	1.563
00	1.598	1.418	1.557	1.544	1.583	1.602	1.588
00	1.479	1.296	1.381	1.522	1.524	1.492	1.504
00	1.372	1.270	1.306	1.394	1.398	1.392	1.385
00	1.191	1.182	1.148	1.168	1.246	1.258	1.189

FLOW(mg):	1.250		1.237		1.305		1.253		1.267		1.270		1.253	
N FLW:	04:35	0.546	04:35	0.535	05:30	0.549	05:20	0.571	04:45	0.549	04:15	0.572	04:00	0.577
FLOW:	04:35	0.546	04:35	0.535	05:30	0.549	05:20	0.571	04:45	0.549	04:15	0.572	04:00	0.577
FLOW:	09:35	1.866	11:50	1.708	18:25	1.914	10:40	1.978	09:40	1.797	10:25	1.744	08:55	1.709

ORS: TIME OF REPORT: 02/24/98 10:20:54 FLOW AVG FOR WEEK: 1.262 FLOW TOTAL FOR WEEK: 8.836

QFINAL


ADS ENVIRONMENTAL SERVICES, INC.
PV_08
Pipe Dimensions: 23.75" X 24.00"
Intersection of Olive & Cottage
Porterville, CA
3.000
2.400
1.800
1.200
0.600
0.000
Quantity (mgd)
Thursday
02/05/98
Friday
02/06/98
Saturday
02/07/98
Sunday
02/08/98
Monday
02/09/98
Tuesday
02/10/98
Wednesday
02/11/98
02/25/98
15:43:30
QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_09
Pipe Dimensions: 17.88" X 17.88"
181 Cottage Ave
Porterville, CA

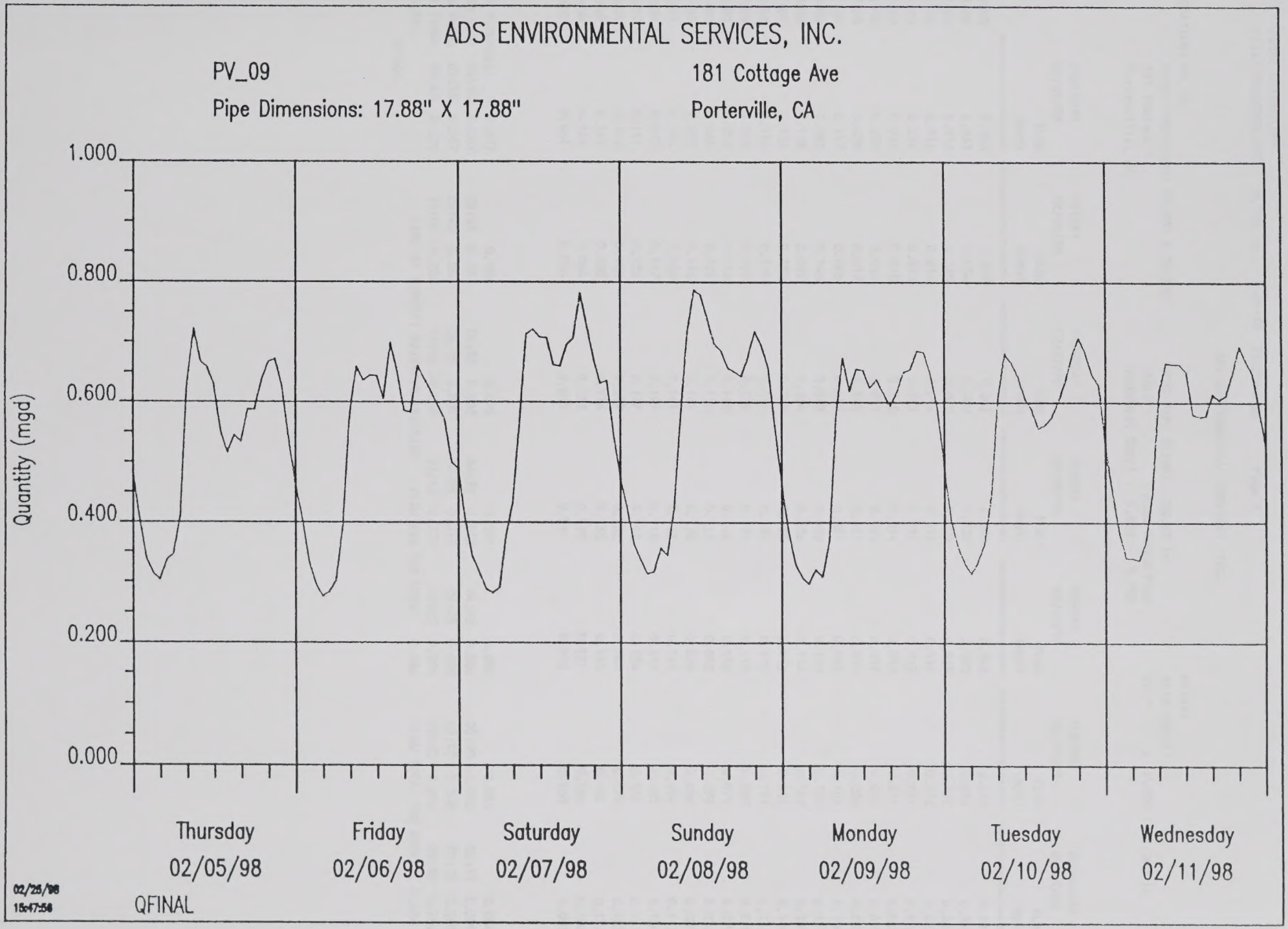
VERT PIPE HEIGHT: 17.88 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 3.687 - 3.687

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.485	0.463	0.488	0.475	0.460	0.493	0.526
1:00	0.403	0.408	0.404	0.423	0.384	0.406	0.450
2:00	0.338	0.333	0.343	0.363	0.329	0.359	0.383
3:00	0.314	0.296	0.317	0.336	0.307	0.332	0.340
4:00	0.302	0.275	0.288	0.313	0.296	0.313	0.340
5:00	0.336	0.283	0.281	0.317	0.321	0.333	0.334
6:00	0.347	0.302	0.290	0.357	0.307	0.366	0.369
7:00	0.408	0.393	0.378	0.344	0.369	0.446	0.451
8:00	0.627	0.577	0.434	0.424	0.575	0.609	0.622
9:00	0.722	0.659	0.567	0.581	0.675	0.682	0.667
10:00	0.668	0.635	0.713	0.719	0.617	0.666	0.664
11:00	0.657	0.645	0.721	0.788	0.656	0.642	0.664
12:00	0.628	0.644	0.708	0.778	0.654	0.607	0.651
13:00	0.551	0.605	0.708	0.738	0.623	0.589	0.581
14:00	0.515	0.698	0.662	0.696	0.638	0.556	0.576
15:00	0.545	0.651	0.660	0.686	0.615	0.562	0.578
16:00	0.533	0.586	0.695	0.657	0.592	0.575	0.614
17:00	0.589	0.582	0.707	0.651	0.617	0.602	0.604
18:00	0.587	0.661	0.782	0.643	0.650	0.634	0.613
9:00	0.635	0.638	0.728	0.675	0.655	0.677	0.649
20:00	0.667	0.617	0.673	0.719	0.686	0.708	0.694
21:00	0.672	0.592	0.631	0.694	0.684	0.683	0.668
22:00	0.626	0.569	0.636	0.657	0.645	0.647	0.646
23:00	0.540	0.500	0.545	0.556	0.588	0.628	0.589

TOT FLOW(mg):	0.529		0.525		0.557		0.566		0.539		0.546		0.553	
AMMIN FLW:	05:10	0.280	04:35	0.249	05:00	0.265	04:35	0.292	05:05	0.264	04:10	0.288	05:40	0.294
MIN FLOW:	05:10	0.280	04:35	0.249	05:00	0.265	04:35	0.292	05:05	0.264	04:10	0.288	05:40	0.294
MAX FLOW:	09:40	0.784	15:00	0.778	18:50	0.828	11:25	0.839	20:10	0.739	20:20	0.737	20:25	0.730

SENSORS: TIME OF REPORT: 02/24/98 10:21:07 FLOW AVG FOR WEEK: 0.545 FLOW TOTAL FOR WEEK: 3.816
QFINAL


ADS ENVIRONMENTAL SERVICES, INC.
PV_09
Pipe Dimensions: 17.88" X 17.88"
181 Cottage Ave
Porterville, CA
1.000
0.800
0.600
0.400
0.200
0.000
Quantity (mgd)
Thursday
02/05/98
Friday
02/06/98
Saturday
02/07/98
Sunday
02/08/98
Monday
02/09/98
Tuesday
02/10/98
Wednesday
02/11/98
02/25/98
15:47:56
QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_10
Pipe Dimensions: 20.63" X 20.75"
137 Indiana St.
Porterville, CA

VERT PIPE HEIGHT: 20.63 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 5.953 - 5.953

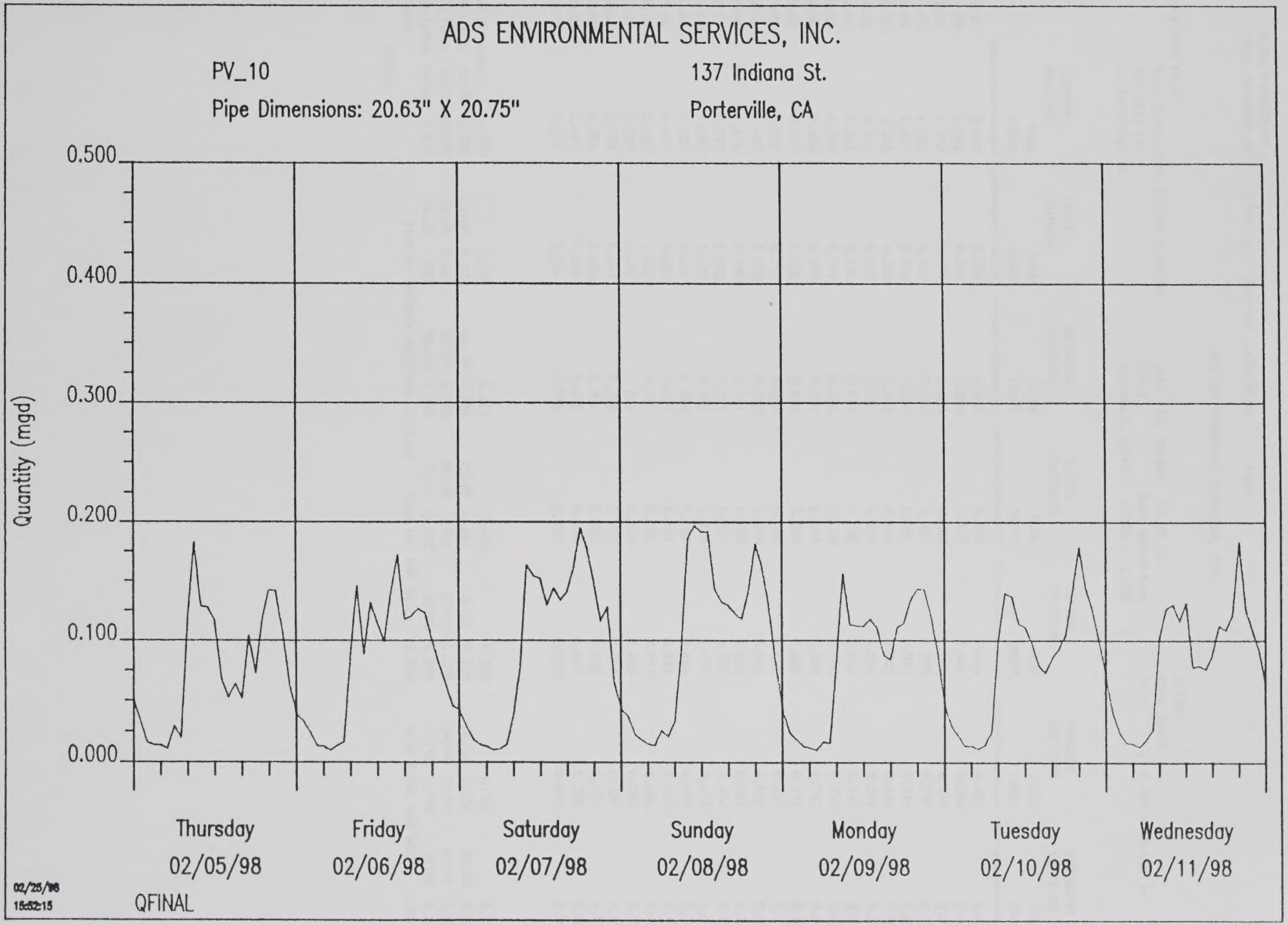
QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.050	0.039	0.043	0.043	0.043	0.047	0.071
1:00	0.033	0.034	0.030	0.038	0.025	0.030	0.040
2:00	0.016	0.025	0.019	0.023	0.019	0.022	0.024
3:00	0.014	0.014	0.014	0.018	0.014	0.014	0.017
4:00	0.014	0.013	0.013	0.015	0.012	0.014	0.016
5:00	0.011	0.010	0.010	0.014	0.010	0.011	0.013
6:00	0.030	0.014	0.011	0.026	0.017	0.015	0.019
7:00	0.020	0.017	0.015	0.021	0.016	0.026	0.027
8:00	0.117	0.088	0.039	0.034	0.083	0.101	0.104
9:00	0.183	0.146	0.079	0.092	0.159	0.140	0.127
10:00	0.128	0.089	0.164	0.186	0.114	0.137	0.131
11:00	0.128	0.132	0.155	0.198	0.112	0.114	0.116
12:00	0.116	0.115	0.152	0.192	0.112	0.111	0.132
13:00	0.068	0.099	0.129	0.192	0.118	0.098	0.078
14:00	0.053	0.140	0.144	0.144	0.110	0.079	0.079
15:00	0.064	0.172	0.134	0.132	0.088	0.073	0.076
16:00	0.052	0.118	0.141	0.130	0.084	0.086	0.089
17:00	0.104	0.120	0.161	0.123	0.111	0.094	0.113
18:00	0.073	0.127	0.195	0.118	0.115	0.105	0.109
9:00	0.117	0.123	0.177	0.141	0.134	0.139	0.121
20:00	0.142	0.101	0.149	0.182	0.144	0.179	0.183
21:00	0.142	0.080	0.116	0.163	0.144	0.144	0.126
22:00	0.109	0.064	0.128	0.130	0.121	0.126	0.108
23:00	0.064	0.046	0.065	0.081	0.090	0.100	0.092

TOT FLOW(mg):	0.077		0.080		0.095		0.101		0.083		0.084		0.084	
AMMIN FLW:	05:10	0.007	05:45	0.006	06:05	0.007	04:55	0.012	04:05	0.008	05:05	0.008	05:15	0.009
MIN FLOW:	05:10	0.007	05:45	0.006	06:05	0.007	04:55	0.012	04:05	0.008	05:05	0.008	05:15	0.009
MAX FLOW:	09:40	0.229	15:00	0.228	19:05	0.236	21:40	0.223	20:25	0.206	20:25	0.206	20:50	0.207

SENSORS:
QFINAL

TIME OF REPORT: 02/24/98 10:21:20 FLOW AVG FOR WEEK: 0.086 FLOW TOTAL FOR WEEK: 0.604


ADS ENVIRONMENTAL SERVICES, INC.
PV_10
Pipe Dimensions: 20.63" X 20.75"
137 Indiana St.
Porterville, CA
0.500
0.400
0.300
0.200
0.100
0.000
Quantity (mgd)
Thursday
02/05/98
Friday
02/06/98
Saturday
02/07/98
Sunday
02/08/98
Monday
02/09/98
Tuesday
02/10/98
Wednesday
02/11/98
02/25/98
15:52:15
QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_11
Pipe Dimensions: 20.75" X 20.75"
335 Date St.
Porterville, CA

VERT PIPE HEIGHT: 20.75 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 2.625 - 2.625

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.468	0.431	0.463	0.437	0.413	0.428	0.488
1:00	0.360	0.393	0.364	0.373	0.346	0.366	0.406
2:00	0.312	0.304	0.320	0.326	0.289	0.314	0.351
3:00	0.288	0.261	0.293	0.306	0.273	0.315	0.327
4:00	0.275	0.258	0.268	0.294	0.276	0.315	0.312
5:00	0.366	0.280	0.281	0.344	0.303	0.320	0.329
6:00	0.336	0.327	0.306	0.309	0.294	0.378	0.380
7:00	0.546	0.476	0.411	0.336	0.446	0.512	0.528
8:00	0.752	0.777	0.476	0.479	0.700	0.736	0.675
9:00	0.808	0.659	0.709	0.671	0.698	0.752	0.693
10:00	0.745	0.782	0.810	0.856	0.663	0.710	0.699
11:00	0.707	0.707	0.839	0.888	0.659	0.657	0.747
12:00	0.653	0.708	0.790	0.879	0.696	0.652	0.594
13:00	0.576	0.729	0.761	0.830	0.656	0.599	0.601
14:00	0.570	0.802	0.721	0.807	0.576	0.616	0.600
15:00	0.583	0.670	0.732	0.729	0.637	0.619	0.616
16:00	0.627	0.669	0.820	0.707	0.639	0.616	0.704
17:00	0.617	0.680	0.831	0.701	0.610	0.625	0.610
18:00	0.680	0.765	0.950	0.735	0.717	0.682	0.687
19:00	0.766	0.690	0.743	0.857	0.749	0.792	0.784
20:00	0.739	0.647	0.708	0.756	0.749	0.766	0.751
21:00	0.716	0.638	0.700	0.820	0.702	0.707	0.732
22:00	0.649	0.585	0.612	0.651	0.661	0.708	0.658
23:00	0.551	0.564	0.518	0.532	0.528	0.601	0.593

TOT FLOW(mg):	0.570		0.575		0.601		0.609		0.553		0.574		0.577	
AMMIN FLW:	04:35	0.255	03:45	0.232	04:30	0.238	05:05	0.261	04:10	0.228	04:40	0.256	04:20	0.255
MIN FLOW:	04:35	0.255	03:45	0.232	04:30	0.238	05:05	0.261	04:10	0.228	04:40	0.256	04:20	0.255
MAX FLOW:	09:05	1.013	14:25	1.012	18:10	1.044	11:35	0.982	18:20	0.899	19:10	0.908	19:50	0.884

SENSORS: TIME OF REPORT: 02/24/98 10:22:49 FLOW AVG FOR WEEK: 0.580 FLOW TOTAL FOR WEEK: 4.061

QFINAL

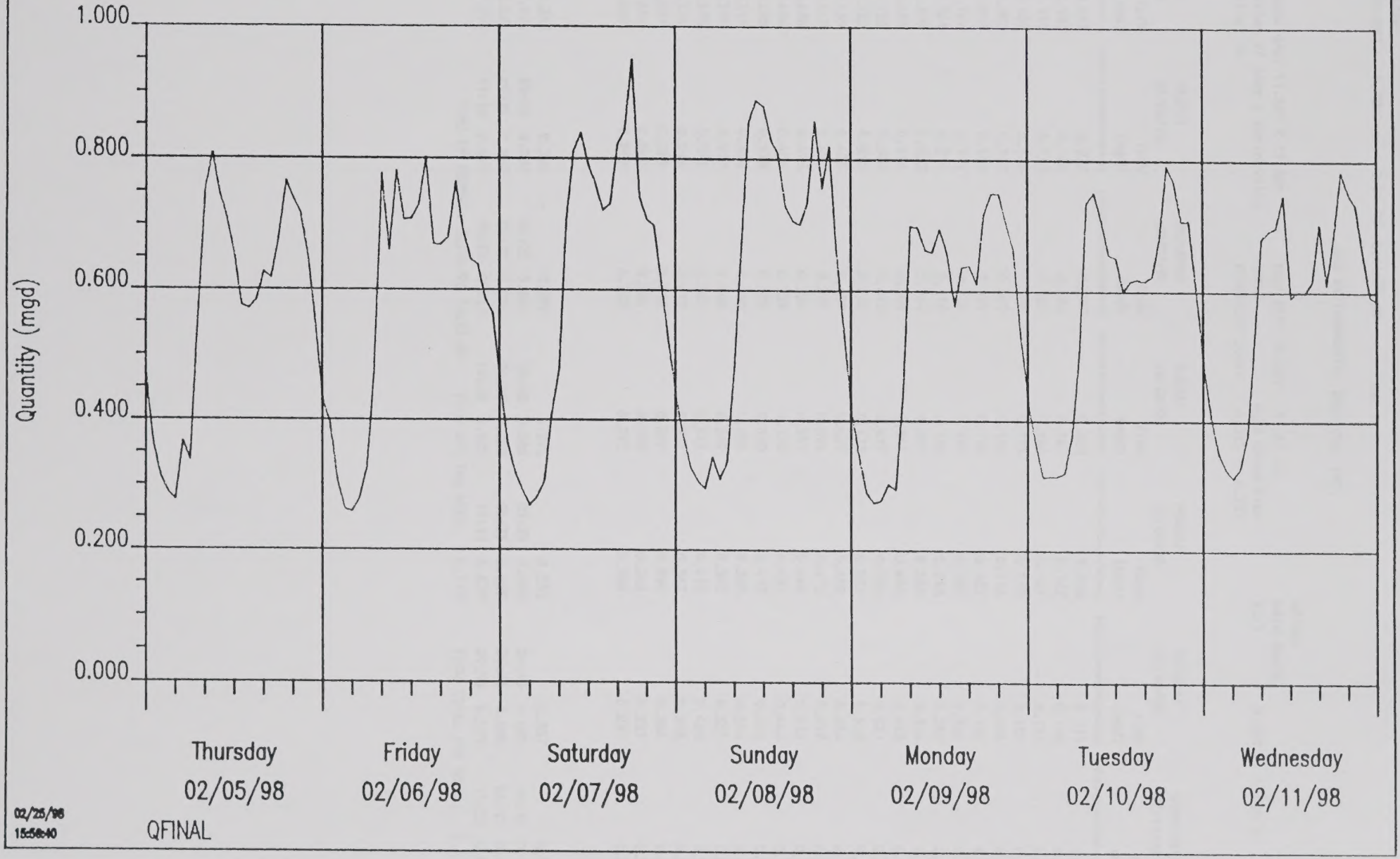
ADS ENVIRONMENTAL SERVICES, INC.

PV_11

Pipe Dimensions: 20.75" X 20.75"

335 Date St.

Porterville, CA



02/25/98
15:56:40

QFINAL

ADS ENVIRONMENTAL SERVICES, INC.

LOCATION: PV_12
Pipe Dimensions: 11.88" X 11.88"
Intersection of Jaye & Springville
Porterville, CA

VERT PIPE HEIGHT: 11.88 in
TABLE : Auto Round Pipe
HYDRAULIC COEFF : 6.333 - 6.333

QFINAL
RAIN GAUGE:
SILT : 0.000 - 0.000 in

	THURSDAY 02/05/98 FLOW (mgd)	FRIDAY 02/06/98 FLOW (mgd)	SATURDAY 02/07/98 FLOW (mgd)	SUNDAY 02/08/98 FLOW (mgd)	MONDAY 02/09/98 FLOW (mgd)	TUESDAY 02/10/98 FLOW (mgd)	WEDNESDAY 02/11/98 FLOW (mgd)
0:00	0.213	0.225	0.207	0.222	0.203	0.211	0.232
1:00	0.187	0.160	0.186	0.167	0.167	0.168	0.163
2:00	0.131	0.153	0.135	0.160	0.137	0.139	0.151
3:00	0.102	0.116	0.126	0.115	0.118	0.107	0.109
4:00	0.090	0.122	0.095	0.110	0.116	0.094	0.111
5:00	0.095	0.107	0.101	0.116	0.102	0.129	0.098
6:00	0.147	0.177	0.128	0.104	0.182	0.286	0.239
7:00	0.261	0.314	0.176	0.130	0.258	0.357	0.305
8:00	0.339	0.423	0.264	0.221	0.349	0.344	0.343
9:00	0.471	0.514	0.403	0.344	0.440	0.443	0.435
10:00	0.533	0.508	0.478	0.477	0.538	0.521	0.498
11:00	0.522	0.512	0.472	0.438	0.557	0.518	0.554
12:00	0.435	0.429	0.429	0.429	0.492	0.454	0.438
13:00	0.442	0.459	0.374	0.394	0.478	0.458	0.418
14:00	0.690	0.476	0.334	0.351	0.444	0.512	0.436
15:00	0.484	0.404	0.333	0.335	0.432	0.444	0.392
16:00	0.395	0.378	0.373	0.330	0.413	0.410	0.376
17:00	0.316	0.334	0.360	0.292	0.362	0.355	0.350
18:00	0.375	0.367	0.406	0.309	0.393	0.383	0.338
19:00	0.370	0.372	0.367	0.343	0.416	0.408	0.391
20:00	0.354	0.316	0.413	0.352	0.367	0.378	0.371
21:00	0.381	0.383	0.416	0.349	0.394	0.354	0.404
22:00	0.314	0.320	0.304	0.309	0.343	0.333	0.330
23:00	0.267	0.262	0.252	0.272	0.289	0.287	0.261

TOT FLOW(mg):	0.330		0.326		0.297		0.278		0.333		0.337		0.323	
AMMIN FLW:	05:35	0.074	05:25	0.087	04:25	0.084	06:00	0.088	05:35	0.089	04:45	0.085	04:15	0.089
MIN FLOW:	05:35	0.074	05:25	0.087	04:25	0.084	06:00	0.088	05:35	0.089	04:45	0.085	04:15	0.089
MAX FLOW:	14:35	0.755	11:10	0.600	10:50	0.512	10:40	0.525	11:10	0.637	09:55	0.579	11:35	0.592

SENSORS: TIME OF REPORT: 02/24/98 10:23:04 FLOW AVG FOR WEEK: 0.318 FLOW TOTAL FOR WEEK: 2.224
QFINAL

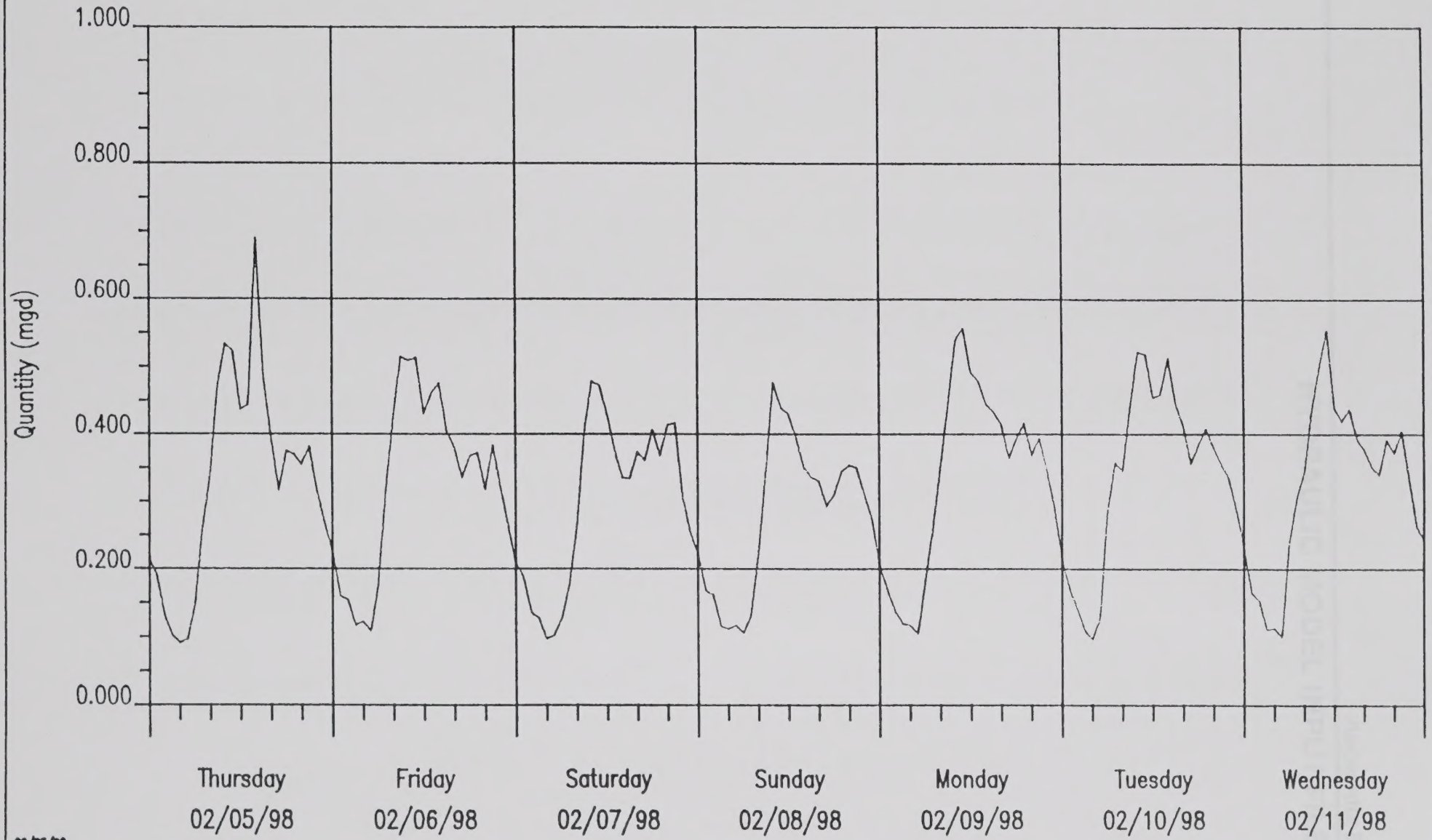
ADS ENVIRONMENTAL SERVICES, INC.

PV_12

Pipe Dimensions: 11.88" X 11.88"

Intersection of Jaye & Springville

Porterville, CA



02/25/98
18:25:11

QFINAL

Appendix B

HYDRAULIC MODEL INPUT FILE

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
1	WWTP	EPI	65.0	432.3	432.0	407.0	406.2	0.0120	as-built
4	Grand-Newcomb	EPI	420.0	430.5	432.3	407.8	407.2	0.0013	as-built
6	Grand-Newcomb	EPI	385.0	428.5	430.5	408.3	407.8	0.0013	as-built
8	Grand-Newcomb	EPI	350.0	427.5	428.5	408.9	408.3	0.0013	as-built
10	Grand-Newcomb	EPI	45.0	427.6	427.5	408.9	408.8	0.0033	as-built
12	Grand-Newcomb	EPI	425.0	428.0	427.6	410.3	409.5	0.0020	as-built
14	Grand-Newcomb	EPI	425.0	430.0	428.0	411.3	410.4	0.0020	as-built
16	Grand-Newcomb	EPI	425.0	430.0	430.0	412.1	411.3	0.0020	as-built
18	Grand-Newcomb	EPI	332.0	430.0	430.0	413.0	412.2	0.0020	as-built
20	Grand-Newcomb	EPI	330.3	430.0	430.0	413.5	413.0	0.0020	as-built
22	Grand-Newcomb	EPI	340.0	430.0	430.0	414.2	413.5	0.0020	as-built
24	Grand-Newcomb	EPI	361.0	430.0	430.0	414.9	414.2	0.0020	as-built
26	Grand-Newcomb	EPI	649.9	430.0	430.0	416.2	414.9	0.0020	as-built
28	Grand-Newcomb	EPI	359.8	430.0	430.0	416.9	416.2	0.0020	as-built
30	Grand-Newcomb	EPI	361.1	431.0	430.0	417.8	417.0	0.0020	as-built
32	Olive Avenue	EPI	605.6	432.0	431.0	420.3	419.1	0.0020	as-built
34	Olive Avenue	EPI	655.5	433.0	432.0	421.7	420.3	0.0020	as-built
36	Olive Avenue	EPI	398.9	432.0	433.0	422.5	421.7	0.0020	as-built
38	Olive Avenue	EPI	902.2	434.0	432.0	424.3	422.5	0.0020	as-built
40	Olive Avenue	EPI	194.0	434.0	434.0	424.7	424.3	0.0020	as-built
42	Olive Avenue	EPI	203.5	435.0	434.0	425.1	424.7	0.0020	as-built
44	Olive Avenue	EPI	358.9	437.0	435.0	425.8	425.1	0.0020	as-built
46	Olive Avenue	EPI	370.0	438.0	437.0	426.6	425.9	0.0020	as-built
48	Olive Avenue	EPI	327.5	438.0	438.0	427.3	426.6	0.0020	as-built
50	Olive Avenue	EPI	325.1	440.0	438.0	428.1	427.4	0.0020	as-built
52	Olive Avenue	EPI	214.0	440.0	440.0	428.5	428.1	0.0020	as-built
54	Olive Avenue	EPI	640.0	442.0	440.0	436.4	435.7	0.0011	as-built
56	Olive Avenue	EPI	705.0	444.0	442.0	437.5	436.4	0.0011	as-built
58	Olive Avenue	EPI	340.0	445.0	444.0	437.9	437.6	0.0009	as-built
60	Olive Avenue	EPI	340.0	446.0	445.0	438.2	437.9	0.0009	as-built
62	Olive Avenue	EPI	340.0	446.0	446.0	438.5	438.2	0.0009	as-built
64	Olive Avenue	EPI	520.0	448.0	446.0	439.6	439.0	0.0012	as-built
66	Olive Avenue	EPI	575.0	450.0	448.0	440.5	439.6	0.0012	as-built
68	Olive Avenue	EPI	550.5	451.0	450.0	441.3	440.6	0.0012	as-built
70	Olive Avenue	EPI	1236.0	454.0	451.0	442.9	441.4	0.0020	as-built
72	Olive Avenue	EPI	615.7	456.0	454.0	443.6	442.9	0.0012	as-built
74	Olive Avenue	EPI	335.0	456.0	456.0	444.0	443.6	0.0012	as-built
76	Olive Avenue	EPI	670.0	456.0	456.0	444.8	444.0	0.0012	as-built
78	Olive Avenue	EPI	335.0	456.0	456.0	445.2	444.8	0.0012	as-built
80	Olive Avenue	EPI	367.2	455.0	456.0	445.8	445.3	0.0012	as-built
82	Olive Avenue	EPI	334.8	456.0	455.0	450.3	449.9	0.0012	as-built
84	Olive Avenue	EPI	307.2	456.0	456.0	450.7	450.4	0.0012	as-built
86	Olive Avenue	EPI	309.2	456.0	456.0	451.2	450.8	0.0012	as-built
88	Olive Avenue	EPI	374.0	457.0	457.0	451.6	451.1	0.0012	as-built
90	Olive Avenue	EPI	390.0	459.0	457.0	452.1	451.6	0.0012	
92	Olive Avenue	EPI	395.0	459.0	459.0	452.6	452.1	0.0012	
94	Olive Avenue	EPI	240.0	460.0	459.0	452.9	452.6	0.0012	
96	Olive Avenue	EPI	435.0	460.0	460.0	453.4	452.9	0.0012	
98	Olive Avenue	EPI	275.0	460.0	460.0	453.7	453.4	0.0012	
100	Olive Avenue	EPI	335.0	461.0	460.0	454.1	453.7	0.0012	
102	Olive Avenue	EPI	295.0	461.0	461.0	454.5	454.1	0.0012	
104	Olive Avenue	EPI	185.0	462.0	461.0	454.7	454.5	0.0012	
106	Olive Avenue	EPI	215.0	462.0	462.0	455.0	454.7	0.0012	
108	Olive Avenue	EPI	130.0	462.0	462.0	450.2	450.0	0.0012	
110	Olive Avenue	EPI	385.0	463.0	462.0	452.9	450.3	0.0067	
112	Olive Avenue	EPI	490.0	464.0	463.0	456.1	452.9	0.0067	
114	Olive Avenue	EPI	545.0	465.0	464.0	459.2	456.1	0.0067	
116	Indiana-Date	EPI	60.0	440.0	440.0	428.6	428.5	0.0015	
118	Indiana-Date	EPI	400.0	441.0	440.0	429.2	428.6	0.0015	
120	Indiana-Date	EPI	200.0	441.0	441.0	429.5	429.2	0.0015	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
122	Indiana-Date	EPI	424.3	439.0	441.0	430.4	429.5	0.0022	as-built
124	Indiana-Date	EPI	409.1	440.0	439.0	431.5	430.4	0.0022	as-built
126	Indiana-Date	EPI	410.0	441.0	440.0	432.4	431.5	0.0022	as-built
128	Indiana-Date	EPI	324.0	441.0	441.0	433.0	432.4	0.0022	as-built
130	Indiana-Date	EPI	337.0	442.0	441.0	433.8	433.0	0.0022	as-built
132	Indiana-Date	EPI	328.1	442.0	442.0	434.1	433.9	0.0024	as-built
134	Indiana-Date	EPI	340.5	443.0	442.0	435.5	434.7	0.0024	as-built
136	Indiana-Date	EPI	491.6	445.0	443.0	436.8	435.6	0.0024	as-built
138	Indiana-Date	EPI	493.0	446.0	445.0	438.0	436.8	0.0024	as-built
140	Indiana-Date	EPI	493.0	447.0	446.0	439.2	438.0	0.0024	as-built
142	Indiana-Date	EPI	454.8	449.0	447.0	440.3	439.2	0.0024	as-built
144	Indiana-Date	EPI	328.0	449.0	449.0	441.0	440.7	0.0008	as-built
146	Indiana-Date	EPI	304.0	447.7	449.0	441.2	441.0	0.0008	as-built
148	Indiana-Date	EPI	411.0	449.2	447.7	442.3	441.4	0.0020	as-built
150	Indiana-Date	EPI	44.6	449.5	449.2	442.4	442.3	0.0020	as-built
152	Indiana-Date	EPI	253.0	450.0	449.5	442.9	442.4	0.0020	as-built
154	Indiana-Date	EPI	368.0	451.0	450.0	443.6	442.9	0.0020	as-built
156	Indiana-Date	EPI	336.0	452.0	451.0	444.3	443.6	0.0020	as-built
158	Indiana-Date	EPI	393.0	452.5	452.0	444.9	444.3	0.0015	as-built
160	Indiana-Date	EPI	33.6	452.5	452.5	445.0	444.9	0.0033	as-built
162	Indiana-Date	EPI	419.0	455.0	452.5	446.4	445.0	0.0033	as-built
164	Indiana-Date	EPI	172.0	455.0	455.0	446.9	446.4	0.0033	as-built
166	Indiana-Date	EPI	481.0	456.0	455.0	447.7	446.9	0.0016	as-built
168	Indiana-Date	EPI	28.3	456.0	456.0	447.8	447.7	0.0016	as-built
170	Indiana-Date	EPI	135.5	456.0	456.0	448.0	447.8	0.0015	as-built
172	Indiana-Date	EPI	400.0	458.0	456.0	448.6	448.0	0.0015	as-built
174	Indiana-Date	EPI	517.7	460.0	458.0	452.5	448.6	0.0015	as-built
176	Indiana-Date	EPI	82.0	462.0	460.0	452.8	451.8	0.0014	as-built
178	Indiana-Date	EPI	400.0	463.0	462.0	453.4	452.8	0.0014	as-built
180	Indiana-Date	EPI	400.0	465.0	463.0	454.0	453.4	0.0014	as-built
182	Indiana-Date	EPI	348.0	467.0	465.0	454.6	454.0	0.0014	as-built
184	Indiana-Date	EPI	339.0	469.0	467.0	455.0	454.6	0.0014	as-built
186	Indiana-Date	EPI	131.0	469.0	469.0	455.5	455.0	0.0040	as-built
188	Indiana-Date	EPI	333.0	466.0	469.0	456.1	455.5	0.0020	as-built
190	Indiana-Date	EPI	325.0	465.0	466.0	456.8	456.1	0.0020	as-built
192	Indiana-Date	EPI	310.0	465.0	465.0	457.4	456.8	0.0020	as-built
194	Indiana-Date	EPI	434.0	464.0	465.0	459.5	457.5	0.0020	as-built
196	Cottage-Union	EPI	276.0	443.0	444.0	437.9	437.6	0.0010	as-built
198	Cottage-Union	EPI	289.0	442.0	443.0	438.2	437.9	0.0010	as-built
200	Cottage-Union	EPI	290.0	442.5	442.0	438.6	438.2	0.0011	as-built
202	Cottage-Union	EPI	277.0	444.0	442.5	438.8	438.6	0.0010	as-built
204	Cottage-Union	EPI	291.0	444.0	444.0	439.1	438.8	0.0010	as-built
206	Cottage-Union	EPI	281.0	444.0	444.0	439.4	439.1	0.0010	as-built
208	Cottage-Union	EPI	282.0	443.0	444.0	439.6	439.4	0.0010	as-built
210	Cottage-Union	EPI	328.0	445.0	443.0	439.9	439.6	0.0010	as-built
212	Cottage-Union	EPI	319.0	445.5	445.0	440.2	439.9	0.0010	as-built
214	Cottage-Union	EPI	331.0	446.0	445.5	440.6	440.2	0.0010	as-built
216	Cottage-Union	EPI	332.0	447.0	446.0	441.0	440.6	0.0010	as-built
218	Cottage-Union	EPI	654.0	449.0	447.0	441.6	441.0	0.0010	as-built
220	Cottage-Union	EPI	329.0	449.0	449.0	441.9	441.6	0.0010	as-built
222	Cottage-Union	EPI	290.0	447.7	449.0	442.2	441.9	0.0010	as-built
224	Indiana-Date	EPI	260.0	448.0	447.7	441.7	441.2	0.0020	
226	Indiana-Date	EPI	250.0	447.0	447.0	442.2	441.7	0.0020	
228	Grand-Newcomb	EPI	75.0	430.0	431.0	418.1	417.8	0.0044	
230	Grand-Newcomb	EPI	22.0	429.5	429.5	418.1	418.1	0.0009	as-built
232	Grand-Newcomb	EPI	718.0	433.0	430.0	418.8	418.1	0.0009	as-built
234	Grand-Newcomb	EPI	320.0	433.0	433.0	419.1	418.8	0.0010	as-built
236	Grand-Newcomb	EPI	497.0	432.0	433.0	419.6	419.1	0.0010	as-built
238	Grand-Newcomb	EPI	505.0	429.5	432.0	420.2	419.6	0.0010	as-built
240	Grand-Newcomb	EPI	473.0	428.0	429.5	420.6	420.2	0.0009	as-built

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
242	Grand-Newcomb	EPI	752.4	427.5	428.0	421.3	420.7	0.0007	as-built
244	Grand-Newcomb	EPI	550.0	426.5	427.5	421.8	421.3	0.0010	as-built
246	Grand-Newcomb	PRE	600.0	430.0	426.5	417.3	421.8	0.0011	as-built
248	Highway-190	EPI	1068.0	434.5	430.0	418.9	417.3	0.0015	as-built
250	Highway-190	EPI	638.0	431.0	434.5	419.9	418.9	0.0015	as-built
252	Highway-190	EPI	944.0	435.0	431.0	421.3	419.9	0.0014	as-built
254	Highway-190	EPI	822.0	434.5	435.0	423.8	421.3	0.0030	as-built
256	Highway-190	EPI	502.0	439.0	434.5	425.4	423.8	0.0032	as-built
258	Highway-190	EPI	253.0	439.0	439.0	425.8	425.4	0.0014	as-built
260	Highway-190	EPI	1067.0	442.0	439.0	427.4	425.8	0.0015	as-built
262	Highway-190	EPI	600.0	444.0	442.0	429.4	427.4	0.0033	as-built
264	Highway-190	EPI	595.0	445.0	444.0	431.5	429.4	0.0034	as-built
266	Highway-190	EPI	600.0	447.0	445.0	433.5	431.5	0.0034	as-built
268	Highway-190	EPI	805.0	449.0	447.0	436.2	433.5	0.0034	as-built
270	Highway-190	EPI	42.0	449.0	449.0	436.4	436.2	0.0033	as-built
272	Highway-190	EPI	407.0	450.0	449.0	441.3	436.4	0.0120	as-built
274	Highway-190	EPI	450.0	451.0	450.0	442.9	441.3	0.0035	as-built
276	Highway-190	EPI	450.0	452.0	451.0	444.5	442.9	0.0035	as-built
278	Highway-190	EPI	437.0	453.0	452.0	446.0	444.5	0.0035	as-built
280	Highway-190	EPI	400.0	430.5	435.0	423.1	422.3	0.0020	as-built
282	Highway-190	EPI	300.0	433.0	430.5	423.7	423.1	0.0020	as-built
284	Highway-190	EPI	400.0	432.0	433.0	424.5	423.7	0.0020	as-built
286	Highway-190	EPI	250.0	434.0	432.0	425.0	424.5	0.0020	as-built
288	Highway-190	EPI	450.0	440.0	442.0	428.9	428.0	0.0020	as-built
290	Highway-190	EPI	450.0	437.0	440.0	429.8	428.9	0.0020	as-built
292	Highway-190	EPI	400.0	439.0	437.0	430.6	429.8	0.0021	as-built
294	Highway-190	EPI	450.0	450.0	449.0	438.4	437.0	0.0032	as-built
296	Highway-190	EPI	450.0	450.0	450.0	439.9	438.4	0.0032	as-built
298	Highway-190	EPI	450.0	449.0	450.0	440.4	439.9	0.0012	as-built
300	Putnam	PRE	80.0	422.5	423.0	410.3	419.8	0.0000	as-built
303	Putnam	EPI	499.0	423.0	424.5	419.8	419.0	0.0015	as-built
305	Putnam	EPI	504.0	424.5	425.0	419.0	418.3	0.0015	as-built
307	Putnam	EPI	176.0	425.0	425.5	418.3	417.9	0.0020	as-built
309	Putnam	EPI	579.0	425.5	426.5	417.9	417.1	0.0015	as-built
311	Putnam	EPI	331.0	426.5	427.0	417.0	416.5	0.0015	as-built
313	Putnam	EPI	284.0	427.0	430.0	416.5	416.1	0.0015	as-built
315	Putnam	EPI	45.0	430.0	430.0	416.1	416.1	0.0015	as-built
316	Putnam	EPI	142.0	422.5	422.5	410.7	410.3	0.0025	as-built
318	Morton	PRE	2575.0	417.0	424.0	412.0	419.2	0.0000	as-built
321	Morton	EPI	333.0	424.0	424.0	419.2	418.7	0.0015	as-built
323	Morton	EPI	330.0	424.0	425.0	418.7	418.2	0.0015	as-built
325	Morton	EPI	336.0	425.0	425.0	418.2	417.7	0.0015	as-built
327	Morton	EPI	415.0	425.0	426.0	417.7	417.1	0.0015	
329	Morton	EPI	333.0	426.0	427.0	417.1	416.6	0.0015	
331	Morton	EPI	180.0	427.0	428.0	416.6	416.3	0.0015	
333	Morton	EPI	400.0	428.0	429.0	416.3	415.7	0.0015	
335	Morton	EPI	325.0	429.0	430.0	415.7	413.6	0.0015	
336	Henderson-Westfield	PRE	1160.0	416.0	419.0	398.6	416.9	0.0000	
339	Henderson-Westfield	EPI	650.0	419.0	422.0	416.8	415.5	0.0020	
341	Henderson-Westfield	EPI	650.0	422.0	424.0	415.5	414.2	0.0020	
343	Henderson-Westfield	EPI	150.0	424.0	424.0	414.2	413.9	0.0015	
345	Henderson-Westfield	EPI	385.0	424.0	424.0	413.9	413.4	0.0015	
347	Henderson-Westfield	EPI	280.0	424.0	425.0	413.4	412.9	0.0015	
349	Henderson-Westfield	EPI	340.0	425.0	427.0	412.9	412.4	0.0015	
351	Henderson-Westfield	EPI	335.0	427.0	429.0	412.4	411.9	0.0015	
353	Newcomb-LindaVista	EPI	55.9	426.0	426.0	410.7	410.6	0.0020	as-built
356	Newcomb-LindaVista	EPI	446.0	425.0	426.0	411.7	410.8	0.0020	as-built
358	Newcomb-LindaVista	EPI	450.0	424.0	425.0	412.5	411.7	0.0020	as-built
360	Newcomb-LindaVista	EPI	415.2	423.0	424.0	413.4	412.6	0.0020	as-built
362	Newcomb-LindaVista	EPI	284.2	426.0	429.0	412.6	412.3	0.0012	as-built

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
364	Newcomb-LindaVista	EPI	284.0	426.0	426.0	413.0	412.6	0.0012	as-built
366	Newcomb-LindaVista	EPI	266.0	425.0	426.0	413.4	413.0	0.0015	as-built
368	Newcomb-LindaVista	EPI	266.0	424.0	425.0	413.8	413.4	0.0015	as-built
370	Newcomb-LindaVista	EPI	210.0	423.0	424.0	414.2	413.8	0.0020	as-built
372	Newcomb-LindaVista	EPI	39.6	423.0	423.0	413.5	413.5	0.0020	as-built
374	Newcomb-LindaVista	EPI	425.0	421.0	423.0	414.5	413.5	0.0024	
376	Newcomb-LindaVista	EPI	65.0	421.0	421.0	414.7	414.5	0.0024	
378	Newcomb-LindaVista	EPI	100.0	419.0	421.0	399.7	399.6	0.0010	as-built
380	Newcomb-LindaVista	EPI	545.0	419.0	419.0	404.4	403.7	0.0012	as-built
382	Newcomb-LindaVista	EPI	542.7	418.0	419.0	404.9	404.4	0.0010	as-built
384	Newcomb-LindaVista	EPI	280.0	418.0	418.0	405.2	404.9	0.0010	as-built
386	Newcomb-LindaVista	EPI	500.0	418.0	418.0	405.7	405.2	0.0010	
388	Newcomb-LindaVista	EPI	265.0	417.0	418.0	405.9	405.7	0.0010	
390	Newcomb-LindaVista	EPI	280.0	417.0	417.0	406.2	405.9	0.0010	
392	Newcomb-LindaVista	EPI	275.5	417.0	417.0	406.5	406.2	0.0010	as-built
394	Newcomb-LindaVista	EPI	115.0	416.0	417.0	406.6	406.5	0.0010	as-built
396	Newcomb-LindaVista	EPI	65.0	416.0	416.0	406.7	406.7	0.0010	as-built
398	Newcomb-LindaVista	EPI	275.0	417.0	416.0	407.0	406.7	0.0010	as-built
400	Newcomb-LindaVista	EPI	440.0	416.0	417.0	407.4	407.0	0.0010	as-built
402	Newcomb-LindaVista	EPI	440.0	414.0	416.0	407.9	407.4	0.0010	as-built
404	Newcomb-LindaVista	EPI	394.0	413.0	414.0	408.3	407.9	0.0010	as-built
406	Newcomb-LindaVista	PRE	25.0	414.0	414.0	396.1	408.3	0.0000	as-built
408	Newcomb-LindaVista	EPI	30.0	414.0	414.0	398.8	396.1	0.0880	as-built
410	Newcomb-LindaVista	EPI	912.0	417.0	414.0	406.1	404.8	0.0014	as-built
412	Newcomb-LindaVista	EPI	318.0	418.0	417.0	406.5	406.1	0.0014	as-built
414	Newcomb-LindaVista	EPI	493.0	420.0	418.0	407.2	406.5	0.0014	as-built
416	Newcomb-LindaVista	EPI	490.0	420.0	420.0	407.9	407.2	0.0014	as-built
418	Newcomb-LindaVista	EPI	345.0	420.0	420.0	408.4	407.9	0.0014	as-built
420	Newcomb-LindaVista	EPI	320.0	421.0	420.0	409.3	408.6	0.0020	as-built
422	Newcomb-LindaVista	EPI	325.0	421.0	421.0	409.9	409.3	0.0020	as-built
424	Newcomb-LindaVista	EPI	420.0	423.0	421.0	410.8	409.9	0.0020	as-built
426	Newcomb-LindaVista	EPI	112.0	425.0	423.0	411.0	410.8	0.0020	as-built
428	Newcomb-LindaVista	EPI	192.0	425.0	425.0	411.4	411.0	0.0023	as-built
430	Newcomb-LindaVista	EPI	157.0	425.0	425.0	415.5	413.7	0.0120	as-built
432	Newcomb-LindaVista	EPI	372.0	430.0	425.0	420.0	415.5	0.0120	as-built
434	Newcomb-LindaVista	EPI	167.0	434.0	430.0	422.0	420.0	0.0120	as-built
436	Newcomb-LindaVista	EPI	205.0	424.0	425.0	412.3	411.9	0.0018	as-built
438	Newcomb-LindaVista	EPI	460.0	423.0	424.0	413.2	412.3	0.0018	as-built
440	Newcomb-LindaVista	EPI	460.0	422.0	423.0	414.0	413.1	0.0018	as-built
442	Newcomb-LindaVista	EPI	460.0	422.0	422.0	414.8	414.0	0.0018	as-built
444	Newcomb-LindaVista	EPI	460.0	421.0	422.0	415.6	414.8	0.0018	as-built
446	Newcomb-LindaVista	EPI	230.0	421.0	421.0	416.0	415.6	0.0018	as-built
448	Newcomb-LindaVista	EPI	85.0	421.0	421.0	416.2	416.0	0.0018	as-built
450	Newcomb-LindaVista	EPI	25.0	429.0	429.0	411.8	411.5	0.0132	as-built
451	Newcomb-LindaVista	EPI	425.0	429.0	429.0	410.5	410.2	0.0006	as-built
453	Newcomb-LindaVista	EPI	425.0	429.0	429.0	410.2	409.9	0.0006	as-built
455	Newcomb-LindaVista	EPI	212.0	427.0	428.0	409.9	409.8	0.0006	as-built
457	Newcomb-LindaVista	EPI	212.0	428.0	428.0	409.8	409.6	0.0006	as-built
459	Newcomb-LindaVista	EPI	40.0	428.0	428.0	409.6	409.6	0.0006	as-built
461	Newcomb-LindaVista	EPI	55.0	428.0	428.0	409.6	409.4	0.0006	
463	Newcomb-LindaVista	EPI	45.0	428.0	427.5	409.4	409.2	0.0006	
464	Henderson-Westfield	EPI	309.0	415.0	416.0	399.1	398.6	0.0018	as-built
466	Henderson-Westfield	EPI	200.0	415.0	415.0	401.7	401.1	0.0018	as-built
468	Henderson-Westfield	EPI	300.0	414.0	415.0	402.0	401.7	0.0018	as-built
470	Henderson-Westfield	EPI	500.0	413.0	414.0	402.9	402.0	0.0018	as-built
472	Henderson-Westfield	EPI	425.0	412.0	413.0	403.6	403.1	0.0011	as-built
474	Henderson-Westfield	EPI	440.0	411.0	412.0	405.5	403.7	0.0026	as-built
476	Henderson-Westfield	EPI	435.7	410.9	411.0	405.7	405.5	0.0022	as-built
478	Henderson-Westfield	PRE	1314.7	411.0	410.9	395.2	407.8	0.0000	as-built
480	Grand Avenue	EPI	360.0	432.0	432.3	411.4	407.0	0.0120	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
482	Grand Avenue	EPI	360.0	432.6	432.0	416.1	411.6	0.0125	
484	Prospect-Morton	EPI	260.0	433.0	432.6	424.2	423.7	0.0019	
486	Prospect-Morton	EPI	200.0	433.0	433.0	424.6	424.2	0.0019	
488	Prospect-Morton	EPI	200.0	433.0	433.0	425.0	424.6	0.0019	
490	Prospect-Morton	EPI	450.0	434.0	433.0	425.8	425.0	0.0019	
492	Prospect-Morton	EPI	360.0	435.0	434.0	426.5	425.8	0.0019	
494	Prospect-Morton	EPI	340.0	436.0	435.0	427.2	426.5	0.0019	
496	Prospect-Morton	EPI	120.0	436.0	436.0	427.5	427.2	0.0019	
498	Prospect-Morton	EPI	404.0	439.0	436.0	428.3	427.5	0.0020	as-built
500	Prospect-Morton	EPI	400.0	438.0	439.0	429.3	428.3	0.0020	as-built
502	Prospect-Morton	EPI	344.0	438.0	438.0	429.8	429.3	0.0020	as-built
504	Prospect-Morton	EPI	20.0	436.0	436.0	430.7	429.8	0.0450	as-built
506	Prospect-Morton	EPI	415.0	440.0	438.0	432.6	430.7	0.0020	as-built
508	Prospect-Morton	EPI	338.0	440.0	440.0	434.9	432.6	0.0068	as-built
510	Prospect-Morton	EPI	372.0	441.0	440.0	435.6	434.9	0.0020	as-built
512	Prospect-Morton	EPI	348.0	442.0	441.0	436.3	435.6	0.0020	as-built
514	Prospect-Morton	EPI	710.0	443.0	442.0	436.6	436.3	0.0004	as-built
516	Prospect-Morton	EPI	309.0	443.0	443.0	436.8	436.6	0.0004	as-built
518	Prospect-Morton	EPI	350.0	444.0	443.0	436.9	436.8	0.0004	as-built
520	Prospect-Morton	EPI	280.0	445.0	444.0	437.0	436.9	0.0004	as-built
522	Prospect-Morton	EPI	700.0	446.0	445.0	437.3	437.0	0.0004	as-built
524	Prospect-Morton	EPI	155.0	446.0	446.0	437.3	437.3	0.0004	as-built
526	Prospect-Morton	EPI	270.0	446.5	446.0	437.5	437.3	0.0004	as-built
528	Prospect-Morton	EPI	124.0	446.5	446.5	437.5	437.5	0.0004	as-built
530	Prospect-Morton	EPI	135.0	445.0	446.5	438.2	438.1	0.0006	as-built+58.55
532	Prospect-Morton	EPI	279.0	445.0	445.0	438.3	438.2	0.0006	as-built+58.55
534	Prospect-Morton	EPI	145.0	444.0	445.0	438.4	438.3	0.0006	as-built+58.55
536	Prospect-Morton	EPI	210.0	444.0	444.0	438.5	438.4	0.0006	as-built+58.55
538	Prospect-Morton	EPI	175.0	443.0	444.0	438.7	438.5	0.0006	as-built+58.55
540	Prospect-Morton	EPI	175.0	443.0	443.0	438.8	438.7	0.0006	as-built+58.55
542	Prospect-Morton	EPI	160.0	442.4	443.0	438.9	438.8	0.0006	as-built+58.55
544	Prospect-Morton	EPI	857.0	444.0	442.4	439.3	438.9	0.0050	as-built+58.55
546	Prospect-Morton	EPI	414.0	444.0	444.0	439.5	439.3	0.0005	as-built+58.55
548	Prospect-Morton	EPI	456.0	444.5	444.0	439.8	439.5	0.0005	as-built+58.55
550	Prospect-Morton	EPI	50.0	444.5	444.5	439.8	439.8	0.0005	as-built+58.55
552	Prospect-Morton	EPI	150.0	444.6	444.5	439.9	439.8	0.0006	as-built+58.55
554	Prospect-Morton	EPI	170.0	444.0	444.6	440.1	440.0	0.0004	
556	Prospect-Morton	EPI	285.0	444.0	444.0	440.2	440.1	0.0004	
558	Prospect-Morton	EPI	375.0	444.7	444.0	440.3	440.2	0.0004	
560	Prospect-Morton	EPI	255.0	445.0	444.7	440.8	440.6	0.0010	
562	Prospect-Morton	EPI	131.0	446.0	446.5	437.8	437.7	0.0006	as-built+58.55
564	Prospect-Morton	EPI	634.0	446.0	446.0	438.1	437.8	0.0006	as-built+58.55
566	Prospect-Morton	EPI	275.0	446.1	446.0	438.3	438.1	0.0006	as-built+58.55
568	Prospect-Morton	EPI	30.0	445.8	446.1	438.4	438.4	0.0010	
570	Prospect-Morton	EPI	190.0	447.0	445.8	438.6	438.4	0.0011	
572	Prospect-Morton	EPI	360.0	449.0	447.0	439.0	438.6	0.0011	
574	Prospect-Morton	EPI	375.0	450.0	449.0	439.4	439.0	0.0011	
576	Prospect-Morton	EPI	400.0	451.0	450.0	439.9	439.4	0.0011	
578	Prospect-Morton	EPI	380.0	452.4	451.0	440.3	439.9	0.0011	
580	Prospect-Morton	EPI	400.0	452.0	452.4	441.2	440.3	0.0022	
582	Prospect-Morton	EPI	300.0	451.0	452.0	441.9	441.2	0.0022	
584	Prospect-Morton	EPI	350.0	451.0	451.0	442.6	441.9	0.0022	
586	Prospect-Morton	EPI	445.0	451.7	451.0	443.8	442.6	0.0022	
588	Prospect-Morton	EPI	175.0	452.0	451.7	444.3	443.8	0.0027	
590	Prospect-Morton	EPI	175.0	452.0	452.0	444.8	444.3	0.0027	
592	Prospect-Morton	EPI	300.0	453.0	452.0	445.6	444.8	0.0027	
594	Prospect-Morton	EPI	300.0	453.7	453.0	446.4	445.6	0.0027	
596	Prospect-Morton	EPI	150.0	454.0	453.7	446.8	446.4	0.0027	
598	Prospect-Morton	EPI	300.0	455.0	454.0	447.6	446.8	0.0027	
600	Prospect-Morton	EPI	360.0	449.0	447.0	440.6	439.1	0.0028	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
603	Prospect-Morton	EPI	190.0	447.0	446.1	439.1	438.4	0.0028	
604	Prospect-Morton	EPI	375.0	450.0	449.0	441.1	440.6	0.0028	
606	Prospect-Morton	EPI	400.0	451.0	450.0	442.2	441.1	0.0028	
608	Prospect-Morton	EPI	380.0	452.7	451.0	443.3	442.2	0.0028	
610	Prospect-Morton	EPI	400.0	452.0	452.7	444.2	443.4	0.0020	
612	Prospect-Morton	EPI	300.0	451.0	452.0	444.8	444.2	0.0020	
614	Prospect-Morton	EPI	350.0	451.0	451.0	445.5	444.8	0.0020	
616	Prospect-Morton	EPI	445.0	451.0	451.0	446.4	445.5	0.0020	
618	Grand Avenue	EPI	45.0	432.6	432.6	423.8	423.7	0.0014	as-built+58.55
620	Grand Avenue	EPI	200.0	432.6	432.6	424.1	423.8	0.0014	as-built+58.55
622	Grand Avenue	EPI	370.0	432.6	432.6	424.6	424.1	0.0014	as-built+58.55
624	Grand Avenue	EPI	370.0	432.6	432.6	425.1	424.6	0.0014	as-built+58.55
626	Grand Avenue	EPI	345.0	432.6	432.6	425.6	425.1	0.0014	as-built+58.55
628	Grand Avenue	EPI	300.0	433.6	432.6	426.0	425.6	0.0014	as-built+58.55
630	Grand Avenue	EPI	300.0	435.6	433.6	426.5	426.0	0.0014	as-built+58.55
632	Grand Avenue	EPI	300.0	435.6	435.6	426.9	426.5	0.0014	as-built+58.55
634	Grand Avenue	EPI	300.0	435.6	435.6	427.3	426.9	0.0014	as-built+58.55
636	Grand Avenue	EPI	50.0	435.6	435.6	427.4	427.3	0.0018	as-built+58.55
638	Grand Avenue	EPI	170.0	436.6	435.6	427.6	427.4	0.0015	as-built+58.55
640	Grand Avenue	EPI	300.0	437.6	436.6	428.1	427.6	0.0015	as-built+58.55
642	Grand Avenue	EPI	300.0	437.6	437.6	428.5	428.1	0.0015	as-built+58.55
644	Grand Avenue	EPI	250.0	437.6	437.6	428.9	428.5	0.0015	as-built+58.55
646	Grand Avenue	EPI	50.0	437.6	437.6	429.0	428.9	0.0015	as-built+58.55
648	Grand Avenue	EPI	350.0	437.6	437.6	429.5	429.0	0.0015	as-built+58.55
650	Grand Avenue	EPI	371.4	438.6	437.6	430.0	429.5	0.0015	as-built+58.55
652	Grand Avenue	EPI	123.0	438.6	438.6	430.1	430.0	0.0015	as-built+58.55
654	Grand Avenue	EPI	200.0	438.6	438.6	430.4	430.1	0.0015	as-built+58.55
656	Grand Avenue	EPI	339.0	438.6	438.6	431.0	430.4	0.0015	as-built+58.55
658	Grand Avenue	EPI	329.0	439.6	439.6	431.4	431.0	0.0015	as-built+58.55
660	Grand Avenue	EPI	300.0	439.6	439.6	431.9	431.4	0.0015	as-built+58.55
662	Grand Avenue	EPI	300.0	440.6	439.6	432.3	431.9	0.0015	as-built+58.55
664	Grand Avenue	EPI	292.0	440.6	440.6	432.8	432.3	0.0015	as-built+58.55
666	Grand Avenue	EPI	274.0	442.6	440.6	433.2	432.8	0.0015	as-built+58.55
668	Grand Avenue	EPI	353.0	442.6	442.6	433.7	433.2	0.0015	as-built+58.55
670	Grand Avenue	EPI	300.0	444.0	442.6	434.2	433.7	0.0015	as-built+58.55
672	Grand Avenue	EPI	880.0	446.0	444.0	435.1	434.2	0.0011	as-built
674	Grand Avenue	EPI	64.0	446.0	446.0	435.2	435.1	0.0011	as-built
676	Grand Avenue	EPI	115.0	445.0	446.0	435.3	435.2	0.0011	as-built
678	Grand Avenue	EPI	230.0	445.0	445.0	435.5	435.3	0.0011	as-built
680	Grand Avenue	EPI	497.0	446.0	445.0	436.1	435.5	0.0011	as-built
682	Grand Avenue	EPI	200.0	446.0	446.0	436.3	436.1	0.0011	as-built
684	Grand Avenue	EPI	444.0	448.0	446.0	436.8	436.3	0.0011	as-built
686	Grand Avenue	EPI	1005.0	447.0	448.0	437.9	436.8	0.0011	as-built
688	Grand Avenue	EPI	166.0	448.0	447.0	438.9	438.7	0.0011	as-built
690	Grand Avenue	EPI	207.8	448.0	448.0	439.4	438.9	0.0026	as-built
692	Grand Avenue	EPI	471.0	450.0	448.0	439.9	439.4	0.0011	as-built
694	Grand Avenue	EPI	145.0	449.0	450.0	440.5	439.9	0.0041	as-built
696	Grand Avenue	EPI	517.6	448.0	449.0	441.3	440.5	0.0016	as-built
698	Grand Avenue	EPI	518.8	448.0	448.0	442.0	441.3	0.0014	as-built
700	Grand-Morton	EPI	120.0	449.0	448.0	443.5	442.5	0.0050	
702	Grand-Morton	EPI	58.0	449.0	449.0	443.8	443.5	0.0050	
704	Grand-Morton	EPI	560.0	451.0	449.0	446.6	443.8	0.0050	
706	Grand-Morton	EPI	560.0	455.0	451.0	449.4	446.6	0.0050	
708	Grand-Morton	EPI	390.0	457.0	455.0	451.3	449.4	0.0050	
710	Grand-Morton	EPI	485.0	459.0	457.0	452.1	451.3	0.0016	
712	Grand-Morton	EPI	425.0	462.0	459.0	452.7	452.1	0.0016	
714	Grand-Morton	EPI	505.0	470.0	462.0	461.3	452.7	0.0170	as-built
716	Grand-Morton	EPI	504.0	468.0	470.0	462.1	461.3	0.0016	as-built
718	Grand-Morton	EPI	262.0	468.0	468.0	462.5	462.1	0.0016	as-built
720	Grand-Morton	EPI	375.0	475.0	468.0	464.9	463.0	0.0050	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
722	Grand-Morton	EPI	485.0	480.0	475.0	467.3	464.9	0.0050	
724	Grand-Morton	EPI	463.0	482.0	480.0	469.6	467.3	0.0050	
726	Plano	EPI	330.0	448.0	448.0	442.8	442.2	0.0015	as-built
728	Plano	EPI	393.0	448.0	448.0	443.6	442.8	0.0015	as-built
730	Plano	EPI	135.0	448.0	448.0	443.8	443.6	0.0015	
732	Plano	EPI	415.0	450.0	448.0	444.4	443.8	0.0015	
734	Porter-Wisconsin	EPI	345.0	436.5	435.6	428.1	427.6	0.0016	
736	Porter-Wisconsin	EPI	315.0	437.5	436.5	428.6	428.1	0.0016	
738	Porter-Wisconsin	EPI	300.0	438.5	437.5	429.2	428.6	0.0020	
740	Porter-Wisconsin	EPI	320.0	440.0	438.5	429.9	429.2	0.0020	
742	Porter-Wisconsin	EPI	360.0	441.0	440.0	430.6	429.9	0.0020	
744	Porter-Wisconsin	EPI	315.0	441.0	441.0	431.2	430.6	0.0020	
746	Porter-Wisconsin	EPI	170.0	441.0	441.0	431.6	431.2	0.0020	
748	Porter-Wisconsin	EPI	425.0	440.0	441.0	432.4	431.6	0.0020	
750	Porter-Wisconsin	EPI	110.0	440.0	440.0	432.6	432.4	0.0020	
752	Porter-Wisconsin	EPI	445.0	440.0	440.0	433.5	432.6	0.0020	
754	Porter-Wisconsin	EPI	320.0	440.0	440.0	434.2	433.5	0.0020	
756	Porter-Wisconsin	EPI	335.0	440.0	440.0	434.8	434.2	0.0020	
758	Porter-Wisconsin	EPI	575.0	440.0	440.0	436.0	434.8	0.0020	
760	Porter-Henderson	EPI	305.0	434.0	435.6	429.0	427.8	0.0015	
762	Porter-Henderson	EPI	237.0	434.0	434.0	429.4	429.0	0.0015	as-built
764	Porter-Henderson	PRE	318.0	433.5	434.0	423.1	429.4	0.0000	
766	Porter-Henderson	EPI	150.0	433.5	433.5	423.4	423.1	0.0015	as-built
768	Porter-Henderson	EPI	233.0	433.0	433.5	423.8	423.4	0.0015	as-built
770	Porter-Henderson	EPI	68.0	433.0	433.0	424.0	423.8	0.0015	as-built
772	Porter-Henderson	EPI	390.0	430.0	433.0	424.9	424.3	0.0020	as-built
774	Porter-Henderson	EPI	331.5	430.0	430.0	425.6	424.9	0.0020	as-built
776	Porter-Henderson	EPI	481.0	430.0	430.0	426.6	425.6	0.0020	as-built
778	Porter-Henderson	EPI	130.0	430.0	430.0	426.8	426.6	0.0020	as-built
780	Porter-Henderson	EPI	305.0	428.0	430.0	419.8	418.2	0.0020	as-built
782	Porter-Henderson	EPI	448.0	428.0	428.0	420.7	419.8	0.0020	as-built
784	Porter-Henderson	EPI	506.0	430.0	428.0	421.7	420.7	0.0020	as-built
786	Porter-Henderson	EPI	150.0	432.0	433.0	425.3	424.2	0.0070	as-built
788	Porter-Henderson	EPI	350.0	433.0	432.0	426.2	425.3	0.0025	as-built
790	Porter-Henderson	EPI	330.0	434.0	433.0	427.0	426.2	0.0025	as-built
792	Porter-Henderson	EPI	357.0	435.0	434.0	427.9	427.0	0.0025	as-built
794	Porter-Henderson	EPI	330.0	436.5	435.0	428.6	427.9	0.0020	as-built
796	Porter-Henderson	EPI	80.0	437.0	436.5	428.7	428.6	0.0020	as-built
798	Porter-Henderson	EPI	188.0	437.5	437.0	429.2	428.7	0.0020	as-built
800	Porter-Henderson	EPI	330.0	437.5	437.5	429.8	429.2	0.0020	as-built
802	Porter-Henderson	EPI	335.0	438.0	437.5	430.5	429.8	0.0020	as-built
804	Porter-Henderson	EPI	293.0	438.0	438.0	431.1	430.5	0.0020	as-built
806	Porter-Henderson	EPI	312.0	439.0	438.0	431.7	431.1	0.0020	as-built
808	Porter-Henderson	EPI	280.0	440.0	439.0	432.3	431.7	0.0020	as-built
810	Porter-Henderson	EPI	350.0	440.0	440.0	433.0	432.3	0.0020	as-built
812	Porter-Henderson	EPI	475.0	441.0	440.0	433.9	433.0	0.0020	as-built
301	Putnam	PUM	0.0	422.5	422.5	410.3	410.3	0.0000	as-built
319	Morton	PUM	10.0	417.0	417.0	412.0	412.0	0.0000	
337	Henderson-Westfield	PUM	10.0	416.0	416.0	398.6	398.6	0.0000	
377	Newcomb-LindaVista	PUM	0.0	421.0	421.0	399.5	399.5	0.0000	
460	Newcomb-LindaVista	MAN	0.0	428.0	428.0	409.6	409.6	0.0000	
479	Henderson-Westfield	PUM	0.0	411.0	411.0	395.2	395.2	0.0000	as-built
763	Porter-Henderson	MAN	0.0	434.0	434.0	429.4	429.4	0.0000	
2	WWTP	OUT	0.0	432.0	432.0	406.2	406.2	0.0000	
3	WWTP	MAN	0.0	432.3	432.3	407.2	407.0	0.0000	
5	Grand-Newcomb	MAN	0.0	430.5	430.5	407.8	407.8	0.0000	
7	Grand-Newcomb	MAN	0.0	428.5	428.5	408.3	408.3	0.0000	
9	Grand-Newcomb	MAN	0.0	427.5	427.5	409.2	408.9	0.0000	
11	Grand-Newcomb	MAN	0.0	427.6	427.6	409.5	408.9	0.0000	
13	Grand-Newcomb	MAN	0.0	428.0	428.0	410.4	410.3	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
15	Grand-Newcomb	MAN	0.0	430.0	430.0	411.3	411.3	0.0000	
17	Grand-Newcomb	MAN	0.0	430.0	430.0	413.6	412.1	0.0000	
19	Grand-Newcomb	MAN	0.0	430.0	430.0	413.0	413.0	0.0000	
21	Grand-Newcomb	MAN	0.0	430.0	430.0	413.5	413.5	0.0000	Flow Monitor 6
23	Grand-Newcomb	MAN	0.0	430.0	430.0	414.2	414.2	0.0000	
25	Grand-Newcomb	MAN	0.0	430.0	430.0	416.1	414.9	0.0000	
27	Grand-Newcomb	MAN	0.0	430.0	430.0	416.2	416.2	0.0000	
29	Grand-Newcomb	MAN	0.0	430.0	430.0	417.0	416.9	0.0000	
31	Grand-Newcomb	MAN	0.0	431.0	431.0	419.1	417.8	0.0000	
33	Olive Avenue	MAN	0.0	432.0	432.0	420.3	420.3	0.0000	
35	Olive Avenue	MAN	0.0	433.0	433.0	421.7	421.7	0.0000	
37	Olive Avenue	MAN	0.0	432.0	432.0	422.5	422.5	0.0000	
39	Olive Avenue	MAN	0.0	434.0	434.0	424.3	424.3	0.0000	
41	Olive Avenue	MAN	0.0	434.0	434.0	424.7	424.7	0.0000	
43	Olive Avenue	MAN	0.0	435.0	435.0	425.1	425.1	0.0000	
45	Olive Avenue	MAN	0.0	437.0	437.0	425.9	425.8	0.0000	
47	Olive Avenue	MAN	0.0	438.0	438.0	426.6	426.6	0.0000	
49	Olive Avenue	MAN	0.0	438.0	438.0	427.4	427.3	0.0000	
51	Olive Avenue	MAN	0.0	440.0	440.0	428.1	428.1	0.0000	
53	Olive Avenue	MAN	0.0	440.0	440.0	435.7	428.5	0.0000	
55	Olive Avenue	MAN	0.0	442.0	442.0	436.4	436.4	0.0000	
57	Olive Avenue	MAN	0.0	444.0	444.0	437.6	437.5	0.0000	Flow Monitor 8
59	Olive Avenue	MAN	0.0	445.0	445.0	437.9	437.9	0.0000	
61	Olive Avenue	MAN	0.0	446.0	446.0	438.2	438.2	0.0000	
63	Olive Avenue	MAN	0.0	446.0	446.0	439.0	438.5	0.0000	
65	Olive Avenue	MAN	0.0	448.0	448.0	439.6	439.6	0.0000	
67	Olive Avenue	MAN	0.0	450.0	450.0	440.6	440.5	0.0000	
69	Olive Avenue	MAN	0.0	451.0	451.0	441.4	441.3	0.0000	
71	Olive Avenue	MAN	0.0	454.0	454.0	442.9	442.9	0.0000	
73	Olive Avenue	MAN	0.0	456.0	456.0	443.6	443.6	0.0000	
75	Olive Avenue	MAN	0.0	456.0	456.0	444.0	444.0	0.0000	
77	Olive Avenue	MAN	0.0	456.0	456.0	444.8	444.8	0.0000	
79	Olive Avenue	MAN	0.0	456.0	456.0	445.3	445.2	0.0000	
81	Olive Avenue	MAN	0.0	455.0	455.0	449.9	445.8	0.0000	
83	Olive Avenue	MAN	0.0	456.0	456.0	450.4	450.3	0.0000	
85	Olive Avenue	MAN	0.0	456.0	456.0	450.8	450.7	0.0000	
87	Olive Avenue	MAN	0.0	456.0	456.0	451.1	451.2	0.0000	
89	Olive Avenue	MAN	0.0	457.0	457.0	451.6	451.6	0.0000	
91	Olive Avenue	MAN	0.0	459.0	459.0	452.1	452.1	0.0000	
93	Olive Avenue	MAN	0.0	459.0	459.0	452.6	452.6	0.0000	
95	Olive Avenue	MAN	0.0	460.0	460.0	452.9	452.9	0.0000	
97	Olive Avenue	MAN	0.0	460.0	460.0	453.4	453.4	0.0000	
99	Olive Avenue	MAN	0.0	460.0	460.0	453.7	453.7	0.0000	
101	Olive Avenue	MAN	0.0	461.0	461.0	454.1	454.1	0.0000	
103	Olive Avenue	MAN	0.0	461.0	461.0	454.5	454.5	0.0000	
105	Olive Avenue	MAN	0.0	462.0	462.0	454.7	454.7	0.0000	
107	Olive Avenue	PUM	0.0	462.0	462.0	450.0	450.0	0.0000	
109	Olive Avenue	MAN	0.0	462.0	462.0	450.3	450.2	0.0000	
111	Olive Avenue	MAN	0.0	463.0	463.0	452.9	452.9	0.0000	
113	Olive Avenue	MAN	0.0	464.0	464.0	456.1	456.1	0.0000	
115	Olive Avenue	MAN	0.0	465.0	465.0	0.0	459.2	0.0000	
117	Indiana-Date	MAN	0.0	440.0	440.0	428.6	428.6	0.0000	
119	Indiana-Date	MAN	0.0	441.0	441.0	429.2	429.2	0.0000	
121	Indiana-Date	MAN	0.0	441.0	441.0	429.5	429.5	0.0000	
123	Indiana-Date	MAN	0.0	439.0	439.0	430.4	430.4	0.0000	
125	Indiana-Date	MAN	0.0	440.0	440.0	431.5	431.5	0.0000	Flow Monitor 10
127	Indiana-Date	MAN	0.0	441.0	441.0	432.4	432.4	0.0000	
129	Indiana-Date	MAN	0.0	441.0	441.0	433.0	433.0	0.0000	
131	Indiana-Date	MAN	0.0	442.0	442.0	433.9	433.8	0.0000	
133	Indiana-Date	MAN	0.0	442.0	442.0	434.7	434.1	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
135	Indiana-Date	MAN	0.0	443.0	443.0	435.6	435.5	0.0000	
137	Indiana-Date	MAN	0.0	445.0	445.0	436.8	436.8	0.0000	
139	Indiana-Date	MAN	0.0	446.0	446.0	438.0	438.0	0.0000	
141	Indiana-Date	MAN	0.0	447.0	447.0	439.2	439.2	0.0000	
143	Indiana-Date	DIV	0.0	449.0	449.0	440.7	440.3	0.0000	
145	Indiana-Date	MAN	0.0	449.0	449.0	441.0	441.0	0.0000	
147	Indiana-Date	MAN	0.0	447.7	447.7	441.4	441.2	0.0000	
149	Indiana-Date	MAN	0.0	449.2	449.2	442.3	442.3	0.0000	
151	Indiana-Date	MAN	0.0	449.5	449.5	442.4	442.4	0.0000	
153	Indiana-Date	MAN	0.0	450.0	450.0	442.9	442.9	0.0000	Flow Monitor 11
155	Indiana-Date	MAN	0.0	451.0	451.0	443.6	443.6	0.0000	
157	Indiana-Date	MAN	0.0	452.0	452.0	444.3	444.3	0.0000	
159	Indiana-Date	MAN	0.0	452.5	452.5	444.9	444.9	0.0000	
161	Indiana-Date	MAN	0.0	452.5	452.5	445.0	445.0	0.0000	
163	Indiana-Date	MAN	0.0	455.0	455.0	446.4	446.4	0.0000	
165	Indiana-Date	MAN	0.0	455.0	455.0	446.9	446.9	0.0000	
167	Indiana-Date	MAN	0.0	456.0	456.0	447.7	447.7	0.0000	
169	Indiana-Date	MAN	0.0	456.0	456.0	447.8	447.8	0.0000	
171	Indiana-Date	MAN	0.0	456.0	456.0	448.0	448.0	0.0000	
173	Indiana-Date	MAN	0.0	458.0	458.0	448.6	448.6	0.0000	
175	Indiana-Date	MAN	0.0	460.0	460.0	451.8	452.5	0.0000	
177	Indiana-Date	MAN	0.0	462.0	462.0	452.8	452.8	0.0000	
179	Indiana-Date	MAN	0.0	463.0	463.0	453.4	453.4	0.0000	
181	Indiana-Date	MAN	0.0	465.0	465.0	454.0	454.0	0.0000	
183	Indiana-Date	MAN	0.0	467.0	467.0	454.6	454.6	0.0000	
185	Indiana-Date	MAN	0.0	469.0	469.0	455.0	455.0	0.0000	
187	Indiana-Date	MAN	0.0	469.0	469.0	455.5	455.5	0.0000	
189	Indiana-Date	MAN	0.0	466.0	466.0	456.1	456.1	0.0000	
191	Indiana-Date	MAN	0.0	465.0	465.0	456.8	456.8	0.0000	
193	Indiana-Date	MAN	0.0	465.0	465.0	457.5	457.4	0.0000	
195	Indiana-Date	MAN	0.0	464.0	464.0	0.0	459.5	0.0000	
197	Cottage-Union	MAN	0.0	443.0	443.0	437.9	437.9	0.0000	
199	Cottage-Union	MAN	0.0	442.0	442.0	438.2	438.2	0.0000	
201	Cottage-Union	MAN	0.0	442.5	442.5	438.6	438.6	0.0000	Flow Monitor 9
203	Cottage-Union	MAN	0.0	444.0	444.0	438.8	438.8	0.0000	
205	Cottage-Union	MAN	0.0	444.0	444.0	439.1	439.1	0.0000	
207	Cottage-Union	MAN	0.0	444.0	444.0	439.4	439.4	0.0000	
209	Cottage-Union	MAN	0.0	443.0	443.0	439.6	439.6	0.0000	
211	Cottage-Union	MAN	0.0	445.0	445.0	439.9	439.9	0.0000	
213	Cottage-Union	MAN	0.0	445.5	445.5	440.2	440.2	0.0000	
215	Cottage-Union	MAN	0.0	446.0	446.0	440.6	440.6	0.0000	
217	Cottage-Union	MAN	0.0	447.0	447.0	441.0	441.0	0.0000	
219	Cottage-Union	MAN	0.0	449.0	449.0	441.6	441.6	0.0000	
221	Cottage-Union	MAN	0.0	449.0	449.0	441.9	441.9	0.0000	
223	Cottage-Union	MAN	0.0	447.7	447.7	0.0	442.2	0.0000	
225	Indiana-Date	MAN	0.0	448.0	448.0	441.7	441.7	0.0000	
227	Indiana-Date	MAN	0.0	447.0	447.0	0.0	442.2	0.0000	
229	Grand-Newcomb	MAN	0.0	430.0	430.0	418.1	418.1	0.0000	
231	Grand-Newcomb	MAN	0.0	429.5	429.5	418.1	418.1	0.0000	
233	Grand-Newcomb	MAN	0.0	433.0	433.0	418.8	418.8	0.0000	Flow Monitor 7
235	Grand-Newcomb	MAN	0.0	433.0	433.0	419.1	419.1	0.0000	
237	Grand-Newcomb	MAN	0.0	432.0	432.0	419.6	419.6	0.0000	
239	Grand-Newcomb	MAN	0.0	429.5	429.5	420.2	420.2	0.0000	
241	Grand-Newcomb	MAN	0.0	428.0	428.0	420.7	420.6	0.0000	
243	Grand-Newcomb	MAN	0.0	427.5	427.5	421.3	421.3	0.0000	
245	Grand-Newcomb	MAN	0.0	426.5	426.5	421.8	421.8	0.0000	
247	Grand-Newcomb	PUM	0.0	430.0	430.0	417.3	417.3	0.0000	
249	Highway-190	MAN	0.0	434.5	434.5	418.9	418.9	0.0000	
251	Highway-190	MAN	0.0	431.0	431.0	419.9	419.9	0.0000	
253	Highway-190	MAN	0.0	435.0	435.0	422.3	421.3	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
255	Highway-190	MAN	0.0	434.5	434.5	423.8	423.8	0.0000	
257	Highway-190	MAN	0.0	439.0	439.0	425.4	425.4	0.0000	
259	Highway-190	MAN	0.0	439.0	439.0	425.8	425.8	0.0000	
261	Highway-190	MAN	0.0	442.0	442.0	428.0	427.4	0.0000	
263	Highway-190	MAN	0.0	444.0	444.0	429.4	429.4	0.0000	
265	Highway-190	MAN	0.0	445.0	445.0	431.5	431.5	0.0000	
267	Highway-190	MAN	0.0	447.0	447.0	433.5	433.5	0.0000	
269	Highway-190	MAN	0.0	449.0	449.0	436.2	436.2	0.0000	
271	Highway-190	DIV	0.0	449.0	449.0	437.0	436.4	0.0000	
273	Highway-190	MAN	0.0	450.0	450.0	441.3	441.3	0.0000	
275	Highway-190	MAN	0.0	451.0	451.0	442.9	442.9	0.0000	
277	Highway-190	MAN	0.0	452.0	452.0	444.5	444.5	0.0000	
279	Highway-190	MAN	0.0	453.0	453.0	0.0	446.0	0.0000	
281	Highway-190	MAN	0.0	430.5	430.5	423.1	423.1	0.0000	
283	Highway-190	MAN	0.0	433.0	433.0	423.7	423.7	0.0000	
285	Highway-190	MAN	0.0	432.0	432.0	424.5	424.5	0.0000	
287	Highway-190	MAN	0.0	434.0	434.0	0.0	425.0	0.0000	
289	Highway-190	MAN	0.0	440.0	440.0	428.9	428.9	0.0000	
291	Highway-190	MAN	0.0	437.0	437.0	429.8	429.8	0.0000	
293	Highway-190	MAN	0.0	439.0	439.0	0.0	430.6	0.0000	
295	Highway-190	MAN	0.0	450.0	450.0	438.4	438.4	0.0000	Flow Monitor 12
297	Highway-190	MAN	0.0	450.0	450.0	439.9	439.9	0.0000	
299	Highway-190	MAN	0.0	449.0	449.0	440.4	440.4	0.0000	
302	Putnam	MAN	0.0	423.0	423.0	419.8	419.8	0.0000	
304	Putnam	MAN	0.0	424.5	424.5	419.0	419.0	0.0000	
306	Putnam	MAN	0.0	425.0	425.0	418.3	418.3	0.0000	
308	Putnam	MAN	0.0	425.5	425.5	417.9	417.9	0.0000	
310	Putnam	MAN	0.0	426.5	426.5	417.1	417.0	0.0000	
312	Putnam	MAN	0.0	427.0	427.0	416.5	416.5	0.0000	
314	Putnam	MAN	0.0	430.0	430.0	416.1	416.1	0.0000	
317	Putnam	MAN	0.0	422.5	422.5	0.0	410.7	0.0000	
320	Morton	MAN	0.0	424.0	424.0	419.2	419.2	0.0000	
322	Morton	MAN	0.0	424.0	424.0	418.7	418.7	0.0000	
324	Morton	MAN	0.0	425.0	425.0	418.2	418.2	0.0000	
326	Morton	MAN	0.0	425.0	425.0	417.7	417.7	0.0000	
328	Morton	MAN	0.0	426.0	426.0	417.1	417.1	0.0000	
330	Morton	MAN	0.0	427.0	427.0	416.6	416.6	0.0000	
332	Morton	MAN	0.0	428.0	428.0	416.3	416.3	0.0000	
334	Morton	MAN	0.0	429.0	429.0	415.7	415.7	0.0000	
338	Henderson-Westfield	MAN	0.0	419.0	419.0	416.9	416.8	0.0000	
340	Henderson-Westfield	MAN	0.0	422.0	422.0	415.5	415.5	0.0000	
342	Henderson-Westfield	MAN	0.0	424.0	424.0	414.2	414.2	0.0000	
344	Henderson-Westfield	MAN	0.0	424.0	424.0	413.9	413.9	0.0000	
346	Henderson-Westfield	MAN	0.0	424.0	424.0	413.4	413.4	0.0000	
348	Henderson-Westfield	MAN	0.0	425.0	425.0	412.9	412.9	0.0000	
350	Henderson-Westfield	MAN	0.0	427.0	427.0	412.4	412.4	0.0000	Flow Monitor 2
352	Newcomb-LindaVista	MAN	0.0	429.0	429.0	412.3	411.8	0.0000	
354	Newcomb-LindaVista	MAN	0.0	429.0	429.0	411.5	410.5	0.0000	
355	Newcomb-LindaVista	MAN	0.0	426.0	426.0	410.8	410.7	0.0000	
357	Newcomb-LindaVista	MAN	0.0	425.0	425.0	411.7	411.7	0.0000	Flow Monitor 1
359	Newcomb-LindaVista	MAN	0.0	424.0	424.0	412.6	412.5	0.0000	
361	Newcomb-LindaVista	MAN	0.0	423.0	423.0	413.5	413.4	0.0000	
363	Newcomb-LindaVista	MAN	0.0	426.0	426.0	412.6	412.6	0.0000	
365	Newcomb-LindaVista	MAN	0.0	426.0	426.0	413.0	413.0	0.0000	
367	Newcomb-LindaVista	MAN	0.0	425.0	425.0	413.4	413.4	0.0000	
369	Newcomb-LindaVista	MAN	0.0	424.0	424.0	413.8	413.8	0.0000	
371	Newcomb-LindaVista	MAN	0.0	423.0	423.0	0.0	414.2	0.0000	
373	Newcomb-LindaVista	MAN	0.0	423.0	423.0	413.5	413.5	0.0000	
375	Newcomb-LindaVista	MAN	0.0	421.0	421.0	414.5	414.5	0.0000	
379	Newcomb-LindaVista	MAN	0.0	419.0	419.0	403.7	399.7	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
381	Newcomb-LindaVista	MAN	0.0	419.0	419.0	404.4	404.4	0.0000	
383	Newcomb-LindaVista	MAN	0.0	418.0	418.0	404.9	404.9	0.0000	
385	Newcomb-LindaVista	MAN	0.0	418.0	418.0	405.2	405.2	0.0000	
387	Newcomb-LindaVista	MAN	0.0	418.0	418.0	405.7	405.7	0.0000	
389	Newcomb-LindaVista	MAN	0.0	417.0	417.0	405.9	405.9	0.0000	
391	Newcomb-LindaVista	MAN	0.0	417.0	417.0	406.2	406.2	0.0000	
393	Newcomb-LindaVista	MAN	0.0	417.0	417.0	406.5	406.5	0.0000	
395	Newcomb-LindaVista	MAN	0.0	416.0	416.0	406.7	406.6	0.0000	
397	Newcomb-LindaVista	MAN	0.0	416.0	416.0	406.7	406.7	0.0000	
399	Newcomb-LindaVista	MAN	0.0	417.0	417.0	407.0	407.0	0.0000	
401	Newcomb-LindaVista	MAN	0.0	416.0	416.0	407.4	407.4	0.0000	
403	Newcomb-LindaVista	MAN	0.0	414.0	414.0	407.9	407.9	0.0000	
405	Newcomb-LindaVista	MAN	0.0	413.0	413.0	408.3	408.3	0.0000	
407	Newcomb-LindaVista	PUM	0.0	414.0	414.0	396.1	396.1	0.0000	as-built
409	Newcomb-LindaVista	MAN	0.0	414.0	414.0	404.8	398.8	0.0000	
411	Newcomb-LindaVista	MAN	0.0	417.0	417.0	406.1	406.1	0.0000	
413	Newcomb-LindaVista	MAN	0.0	418.0	418.0	406.5	406.5	0.0000	
415	Newcomb-LindaVista	MAN	0.0	420.0	420.0	407.2	407.2	0.0000	
417	Newcomb-LindaVista	MAN	0.0	420.0	420.0	407.9	407.9	0.0000	
419	Newcomb-LindaVista	MAN	0.0	420.0	420.0	408.6	408.4	0.0000	
421	Newcomb-LindaVista	MAN	0.0	421.0	421.0	409.3	409.3	0.0000	
423	Newcomb-LindaVista	MAN	0.0	421.0	421.0	409.9	409.9	0.0000	
425	Newcomb-LindaVista	MAN	0.0	423.0	423.0	410.8	410.8	0.0000	
427	Newcomb-LindaVista	MAN	0.0	425.0	425.0	411.0	411.0	0.0000	
429	Newcomb-LindaVista	MAN	0.0	425.0	425.0	413.7	411.4	0.0000	
431	Newcomb-LindaVista	MAN	0.0	425.0	425.0	415.5	415.5	0.0000	
433	Newcomb-LindaVista	MAN	0.0	430.0	430.0	420.0	420.0	0.0000	
435	Newcomb-LindaVista	MAN	0.0	434.0	434.0	0.0	422.0	0.0000	
437	Newcomb-LindaVista	MAN	0.0	424.0	424.0	412.3	412.3	0.0000	
439	Newcomb-LindaVista	MAN	0.0	423.0	423.0	413.1	413.2	0.0000	
441	Newcomb-LindaVista	MAN	0.0	422.0	422.0	414.0	414.0	0.0000	
443	Newcomb-LindaVista	MAN	0.0	422.0	422.0	414.8	414.8	0.0000	
445	Newcomb-LindaVista	MAN	0.0	421.0	421.0	415.6	415.6	0.0000	
447	Newcomb-LindaVista	MAN	0.0	421.0	421.0	416.0	416.0	0.0000	
449	Newcomb-LindaVista	MAN	0.0	421.0	421.0	0.0	416.2	0.0000	
452	Newcomb-LindaVista	MAN	0.0	429.0	429.0	410.2	410.2	0.0000	
454	Newcomb-LindaVista	MAN	0.0	427.0	427.0	409.9	409.9	0.0000	
456	Newcomb-LindaVista	MAN	0.0	428.0	428.0	409.8	409.8	0.0000	
458	Newcomb-LindaVista	MAN	0.0	428.0	428.0	409.6	409.6	0.0000	
462	Newcomb-LindaVista	MAN	0.0	428.0	428.0	409.4	409.4	0.0000	
465	Henderson-Westfield	MAN	0.0	415.0	415.0	401.1	399.1	0.0000	
467	Henderson-Westfield	MAN	0.0	415.0	415.0	401.7	401.7	0.0000	
469	Henderson-Westfield	MAN	0.0	414.0	414.0	402.0	402.0	0.0000	
471	Henderson-Westfield	MAN	0.0	413.0	413.0	403.1	402.9	0.0000	
473	Henderson-Westfield	MAN	0.0	412.0	412.0	403.7	403.6	0.0000	
475	Henderson-Westfield	MAN	0.0	411.0	411.0	405.5	405.5	0.0000	
477	Henderson-Westfield	MAN	0.0	410.9	410.9	407.8	405.7	0.0000	
481	Grand Avenue	MAN	0.0	432.0	432.0	411.6	411.4	0.0000	
483	Grand Avenue	MAN	0.0	432.6	432.6	423.7	416.1	0.0000	
485	Prospect-Morton	MAN	0.0	433.0	433.0	424.2	424.2	0.0000	
487	Prospect-Morton	MAN	0.0	433.0	433.0	424.6	424.6	0.0000	
489	Prospect-Morton	MAN	0.0	433.0	433.0	425.0	425.0	0.0000	
491	Prospect-Morton	MAN	0.0	434.0	434.0	425.8	425.8	0.0000	
493	Prospect-Morton	MAN	0.0	435.0	435.0	426.5	426.5	0.0000	
495	Prospect-Morton	MAN	0.0	436.0	436.0	427.2	427.2	0.0000	
497	Prospect-Morton	MAN	0.0	436.0	436.0	427.5	427.5	0.0000	
499	Prospect-Morton	MAN	0.0	439.0	439.0	428.3	428.3	0.0000	Flow Monitor 5
501	Prospect-Morton	MAN	0.0	438.0	438.0	429.3	429.3	0.0000	
503	Prospect-Morton	MAN	0.0	438.0	438.0	429.8	429.8	0.0000	
505	Prospect-Morton	MAN	0.0	436.0	436.0	430.7	430.7	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
507	Prospect-Morton	MAN	0.0	440.0	440.0	432.6	432.6	0.0000	
509	Prospect-Morton	MAN	0.0	440.0	440.0	434.9	434.9	0.0000	
511	Prospect-Morton	MAN	0.0	441.0	441.0	435.6	435.6	0.0000	
513	Prospect-Morton	MAN	0.0	442.0	442.0	436.3	436.3	0.0000	
515	Prospect-Morton	MAN	0.0	443.0	443.0	436.6	436.6	0.0000	
517	Prospect-Morton	MAN	0.0	443.0	443.0	436.8	436.8	0.0000	
519	Prospect-Morton	MAN	0.0	444.0	444.0	436.9	436.9	0.0000	
521	Prospect-Morton	MAN	0.0	445.0	445.0	437.0	437.0	0.0000	
523	Prospect-Morton	MAN	0.0	446.0	446.0	437.3	437.3	0.0000	
525	Prospect-Morton	MAN	0.0	446.0	446.0	437.3	437.3	0.0000	
527	Prospect-Morton	MAN	0.0	446.5	446.5	437.5	437.5	0.0000	
529	Prospect-Morton	MAN	0.0	446.5	446.5	438.1	437.5	0.0000	
531	Prospect-Morton	MAN	0.0	445.0	445.0	438.2	438.2	0.0000	
533	Prospect-Morton	MAN	0.0	445.0	445.0	438.3	438.3	0.0000	
535	Prospect-Morton	MAN	0.0	444.0	444.0	438.4	438.4	0.0000	
537	Prospect-Morton	MAN	0.0	444.0	444.0	438.5	438.5	0.0000	
539	Prospect-Morton	MAN	0.0	443.0	443.0	438.7	438.7	0.0000	
541	Prospect-Morton	MAN	0.0	443.0	443.0	438.8	438.8	0.0000	
543	Prospect-Morton	DIV	0.0	442.4	442.4	438.9	438.9	0.0000	
545	Prospect-Morton	MAN	0.0	444.0	444.0	439.3	439.3	0.0000	
547	Prospect-Morton	MAN	0.0	444.0	444.0	439.5	439.5	0.0000	
549	Prospect-Morton	MAN	0.0	444.5	444.5	439.8	439.8	0.0000	
551	Prospect-Morton	MAN	0.0	444.5	444.5	439.8	439.8	0.0000	
553	Prospect-Morton	MAN	0.0	444.6	444.6	440.0	439.9	0.0000	
555	Prospect-Morton	MAN	0.0	444.0	444.0	440.1	440.1	0.0000	
557	Prospect-Morton	MAN	0.0	444.0	444.0	440.2	440.2	0.0000	
559	Prospect-Morton	MAN	0.0	444.7	444.7	440.6	440.3	0.0000	
561	Prospect-Morton	MAN	0.0	445.0	445.0	0.0	440.8	0.0000	
563	Prospect-Morton	MAN	0.0	446.0	446.0	437.8	437.8	0.0000	
565	Prospect-Morton	MAN	0.0	446.0	446.0	438.1	438.1	0.0000	
567	Prospect-Morton	MAN	0.0	446.1	446.1	438.4	438.3	0.0000	
569	Prospect-Morton	MAN	0.0	445.8	445.8	438.4	438.4	0.0000	
571	Prospect-Morton	MAN	0.0	447.0	447.0	438.6	438.6	0.0000	
573	Prospect-Morton	MAN	0.0	449.0	449.0	439.0	439.0	0.0000	
575	Prospect-Morton	MAN	0.0	450.0	450.0	439.4	439.4	0.0000	
577	Prospect-Morton	MAN	0.0	451.0	451.0	439.9	439.9	0.0000	
579	Prospect-Morton	MAN	0.0	452.4	452.4	440.3	440.3	0.0000	
581	Prospect-Morton	MAN	0.0	452.0	452.0	441.2	441.2	0.0000	
583	Prospect-Morton	MAN	0.0	451.0	451.0	441.9	441.9	0.0000	
585	Prospect-Morton	MAN	0.0	451.0	451.0	442.6	442.6	0.0000	
587	Prospect-Morton	MAN	0.0	451.7	451.7	443.8	443.8	0.0000	
589	Prospect-Morton	MAN	0.0	452.0	452.0	444.3	444.3	0.0000	
591	Prospect-Morton	MAN	0.0	452.0	452.0	444.8	444.8	0.0000	
593	Prospect-Morton	MAN	0.0	453.0	453.0	445.6	445.6	0.0000	
595	Prospect-Morton	MAN	0.0	453.7	453.7	446.4	446.4	0.0000	
597	Prospect-Morton	MAN	0.0	454.0	454.0	446.8	446.8	0.0000	
599	Prospect-Morton	MAN	0.0	455.0	455.0	0.0	447.6	0.0000	
601	Prospect-Morton	MAN	0.0	447.0	447.0	439.1	439.1	0.0000	
602	Prospect-Morton	MAN	0.0	449.0	449.0	440.6	440.6	0.0000	
605	Prospect-Morton	MAN	0.0	450.0	450.0	441.1	441.1	0.0000	
607	Prospect-Morton	MAN	0.0	451.0	451.0	442.2	442.2	0.0000	
609	Prospect-Morton	MAN	0.0	452.7	452.7	443.4	443.3	0.0000	
611	Prospect-Morton	MAN	0.0	452.0	452.0	444.2	444.2	0.0000	
613	Prospect-Morton	MAN	0.0	451.0	451.0	444.8	444.8	0.0000	
615	Prospect-Morton	MAN	0.0	451.0	451.0	445.5	445.5	0.0000	
617	Prospect-Morton	MAN	0.0	451.0	451.0	0.0	446.4	0.0000	
619	Grand Avenue	MAN	0.0	432.6	432.6	423.8	423.8	0.0000	
621	Grand Avenue	MAN	0.0	432.6	432.6	424.1	424.1	0.0000	
623	Grand Avenue	MAN	0.0	432.6	432.6	424.6	424.6	0.0000	
625	Grand Avenue	MAN	0.0	432.6	432.6	425.1	425.1	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
627	Grand Avenue	MAN	0.0	432.6	432.6	425.6	425.6	0.0000	
629	Grand Avenue	MAN	0.0	433.6	433.6	426.0	426.0	0.0000	
631	Grand Avenue	MAN	0.0	435.6	435.6	426.5	426.5	0.0000	
633	Grand Avenue	MAN	0.0	435.6	435.6	426.9	426.9	0.0000	
635	Grand Avenue	MAN	0.0	435.6	435.6	427.8	427.3	0.0000	
637	Grand Avenue	MAN	0.0	435.6	435.6	427.4	427.4	0.0000	
639	Grand Avenue	MAN	0.0	436.6	436.6	427.6	427.6	0.0000	Flow Monitor 4
641	Grand Avenue	MAN	0.0	437.6	437.6	428.1	428.1	0.0000	
643	Grand Avenue	MAN	0.0	437.6	437.6	428.5	428.5	0.0000	
645	Grand Avenue	MAN	0.0	437.6	437.6	428.9	428.9	0.0000	
647	Grand Avenue	MAN	0.0	437.6	437.6	429.0	429.0	0.0000	
649	Grand Avenue	MAN	0.0	437.6	437.6	429.5	429.5	0.0000	
651	Grand Avenue	MAN	0.0	438.6	438.6	430.0	430.0	0.0000	
653	Grand Avenue	MAN	0.0	438.6	438.6	430.1	430.1	0.0000	
655	Grand Avenue	MAN	0.0	438.6	438.6	430.4	430.4	0.0000	
657	Grand Avenue	MAN	0.0	438.6	438.6	431.0	431.0	0.0000	
659	Grand Avenue	MAN	0.0	439.6	439.6	431.4	431.4	0.0000	
661	Grand Avenue	MAN	0.0	439.6	439.6	431.9	431.9	0.0000	
663	Grand Avenue	MAN	0.0	440.6	440.6	432.3	432.3	0.0000	
665	Grand Avenue	MAN	0.0	440.6	440.6	432.8	432.8	0.0000	
667	Grand Avenue	MAN	0.0	442.6	442.6	433.2	433.2	0.0000	
669	Grand Avenue	MAN	0.0	442.6	442.6	433.7	433.7	0.0000	
671	Grand Avenue	MAN	0.0	444.0	444.0	434.2	434.2	0.0000	
673	Grand Avenue	MAN	0.0	446.0	446.0	435.1	435.1	0.0000	
675	Grand Avenue	MAN	0.0	446.0	446.0	435.2	435.2	0.0000	
677	Grand Avenue	MAN	0.0	445.0	445.0	435.3	435.3	0.0000	
679	Grand Avenue	MAN	0.0	445.0	445.0	435.5	435.5	0.0000	
681	Grand Avenue	MAN	0.0	446.0	446.0	436.1	436.1	0.0000	
683	Grand Avenue	MAN	0.0	446.0	446.0	436.3	436.3	0.0000	
685	Grand Avenue	MAN	0.0	448.0	448.0	436.8	436.8	0.0000	
687	Grand Avenue	MAN	0.0	447.0	447.0	438.7	437.9	0.0000	
689	Grand Avenue	MAN	0.0	448.0	448.0	438.9	438.9	0.0000	
691	Grand Avenue	MAN	0.0	448.0	448.0	439.4	439.4	0.0000	
693	Grand Avenue	MAN	0.0	450.0	450.0	439.9	439.9	0.0000	
695	Grand Avenue	MAN	0.0	449.0	449.0	440.5	440.5	0.0000	
697	Grand Avenue	MAN	0.0	448.0	448.0	441.3	441.3	0.0000	
699	Grand Avenue	MAN	0.0	448.0	448.0	442.5	442.0	0.0000	
701	Grand-Morton	MAN	0.0	449.0	449.0	443.5	443.5	0.0000	
703	Grand-Morton	MAN	0.0	449.0	449.0	443.8	443.8	0.0000	
705	Grand-Morton	MAN	0.0	451.0	451.0	446.6	446.6	0.0000	
707	Grand-Morton	MAN	0.0	455.0	455.0	449.4	449.4	0.0000	
709	Grand-Morton	MAN	0.0	457.0	457.0	451.3	451.3	0.0000	
711	Grand-Morton	MAN	0.0	459.0	459.0	452.1	452.1	0.0000	
713	Grand-Morton	MAN	0.0	462.0	462.0	452.7	452.7	0.0000	
715	Grand-Morton	MAN	0.0	470.0	470.0	461.3	461.3	0.0000	
717	Grand-Morton	MAN	0.0	468.0	468.0	462.1	462.1	0.0000	
719	Grand-Morton	MAN	0.0	468.0	468.0	463.0	462.5	0.0000	
721	Grand-Morton	MAN	0.0	475.0	475.0	464.9	464.9	0.0000	
723	Grand-Morton	MAN	0.0	480.0	480.0	467.3	467.3	0.0000	
725	Grand-Morton	MAN	0.0	482.0	482.0	0.0	469.6	0.0000	
727	Plano	MAN	0.0	448.0	448.0	442.8	442.8	0.0000	
729	Plano	MAN	0.0	448.0	448.0	443.6	443.6	0.0000	
731	Plano	MAN	0.0	448.0	448.0	443.8	443.8	0.0000	
733	Plano	MAN	0.0	450.0	450.0	0.0	444.4	0.0000	
735	Porter-Wisconsin	MAN	0.0	436.5	436.5	428.1	428.1	0.0000	
737	Porter-Wisconsin	MAN	0.0	437.5	437.5	428.6	428.6	0.0000	
739	Porter-Wisconsin	MAN	0.0	438.5	438.5	429.2	429.2	0.0000	
741	Porter-Wisconsin	MAN	0.0	440.0	440.0	429.9	429.9	0.0000	
743	Porter-Wisconsin	MAN	0.0	441.0	441.0	430.6	430.6	0.0000	
745	Porter-Wisconsin	MAN	0.0	441.0	441.0	431.2	431.2	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
747	Porter-Wisconsin	MAN	0.0	441.0	441.0	431.6	431.6	0.0000	
749	Porter-Wisconsin	MAN	0.0	440.0	440.0	432.4	432.4	0.0000	
751	Porter-Wisconsin	MAN	0.0	440.0	440.0	432.6	432.6	0.0000	
753	Porter-Wisconsin	MAN	0.0	440.0	440.0	433.5	433.5	0.0000	
755	Porter-Wisconsin	MAN	0.0	440.0	440.0	434.2	434.2	0.0000	
757	Porter-Wisconsin	MAN	0.0	440.0	440.0	434.8	434.8	0.0000	
759	Porter-Wisconsin	MAN	0.0	440.0	440.0	0.0	436.0	0.0000	
761	Porter-Henderson	MAN	0.0	434.0	434.0	429.0	429.0	0.0000	Flow Monitor 3
765	Porter-Henderson	PUM	0.0	433.5	433.5	423.1	423.1	0.0000	
767	Porter-Henderson	MAN	0.0	433.5	433.5	423.4	423.4	0.0000	
769	Porter-Henderson	MAN	0.0	433.0	433.0	423.8	423.8	0.0000	
771	Porter-Henderson	MAN	0.0	433.0	433.0	424.3	424.0	0.0000	
773	Porter-Henderson	MAN	0.0	430.0	430.0	424.9	424.9	0.0000	
775	Porter-Henderson	MAN	0.0	430.0	430.0	425.6	425.6	0.0000	
777	Porter-Henderson	MAN	0.0	430.0	430.0	426.6	426.6	0.0000	
779	Porter-Henderson	PUM	0.0	430.0	430.0	418.2	418.2	0.0000	
781	Porter-Henderson	MAN	0.0	428.0	428.0	419.8	419.8	0.0000	
783	Porter-Henderson	MAN	0.0	428.0	428.0	420.7	420.7	0.0000	
785	Porter-Henderson	MAN	0.0	430.0	430.0	0.0	421.7	0.0000	
787	Porter-Henderson	MAN	0.0	432.0	432.0	425.3	425.3	0.0000	
789	Porter-Henderson	MAN	0.0	433.0	433.0	426.2	426.2	0.0000	
791	Porter-Henderson	MAN	0.0	434.0	434.0	427.0	427.0	0.0000	
793	Porter-Henderson	MAN	0.0	435.0	435.0	427.9	427.9	0.0000	
795	Porter-Henderson	MAN	0.0	436.5	436.5	428.6	428.6	0.0000	
797	Porter-Henderson	MAN	0.0	437.0	437.0	428.7	428.7	0.0000	
799	Porter-Henderson	MAN	0.0	437.5	437.5	429.2	429.2	0.0000	
801	Porter-Henderson	MAN	0.0	437.5	437.5	429.8	429.8	0.0000	
803	Porter-Henderson	MAN	0.0	438.0	438.0	430.5	430.5	0.0000	
805	Porter-Henderson	MAN	0.0	438.0	438.0	431.1	431.1	0.0000	
807	Porter-Henderson	MAN	0.0	439.0	439.0	431.7	431.7	0.0000	
809	Porter-Henderson	MAN	0.0	440.0	440.0	432.3	432.3	0.0000	
811	Porter-Henderson	MAN	0.0	440.0	440.0	433.0	433.0	0.0000	
813	Porter-Henderson	MAN	0.0	441.0	441.0	0.0	433.9	0.0000	
814	Highway-190	EPI	165.0	449.0	449.0	440.6	440.4	0.0009	
816	Highway-190	EPI	195.0	450.0	449.0	440.7	440.6	0.0009	
818	Highway-190	EPI	200.0	450.0	450.0	440.9	440.7	0.0009	
820	Highway-190	EPI	415.0	451.0	450.0	441.3	440.9	0.0009	
822	Highway-190	EPI	150.0	452.0	451.0	441.4	441.3	0.0009	
824	Highway-190	EPI	200.0	452.0	452.0	441.6	441.4	0.0009	
826	Highway-190	EPI	830.0	453.0	452.0	442.4	441.6	0.0009	
828	Highway-190	EPI	500.0	454.0	453.0	442.8	442.4	0.0009	
830	Highway-190	EPI	70.0	454.0	454.0	442.9	442.8	0.0009	
832	Highway-190	EPI	65.0	454.0	454.0	443.0	442.9	0.0010	
834	Highway-190	EPI	238.0	455.0	454.0	443.9	443.3	0.0027	
836	Highway-190	EPI	310.0	456.0	455.0	444.7	443.9	0.0027	
838	Highway-190	EPI	315.0	457.0	456.0	445.6	444.7	0.0027	
840	Highway-190	EPI	500.0	458.0	457.0	446.9	445.6	0.0027	
842	Highway-190	EPI	690.0	459.0	458.0	448.8	446.9	0.0027	
844	Highway-190	EPI	305.0	460.0	459.0	449.6	448.8	0.0027	
846	Highway-190	EPI	270.0	461.0	460.0	450.4	449.6	0.0027	
848	Highway-190	EPI	377.0	462.0	461.0	451.4	450.4	0.0027	
850	Highway-190	EPI	465.0	463.0	462.0	452.8	451.4	0.0027	
815	Highway-190	MAN	0.0	449.0	449.0	440.6	440.6	0.0000	
817	Highway-190	MAN	0.0	450.0	450.0	440.7	440.7	0.0000	
819	Highway-190	MAN	0.0	450.0	450.0	440.9	440.9	0.0000	
821	Highway-190	MAN	0.0	451.0	451.0	441.3	441.3	0.0000	
823	Highway-190	MAN	0.0	452.0	452.0	441.4	441.4	0.0000	
825	Highway-190	MAN	0.0	452.0	452.0	441.6	441.6	0.0000	
827	Highway-190	MAN	0.0	453.0	453.0	442.4	442.4	0.0000	
829	Highway-190	MAN	0.0	454.0	454.0	442.8	442.8	0.0000	

City of Porterville Sewer Hydraulic Model - Input Database

ID No.	Lateral Name	Type	Length	GroundUp	GroundDn	InvertUp	InvertDn	Slope	Note
831	Highway-190	MAN	0.0	454.0	454.0	442.9	442.9	0.0000	
833	Highway-190	MAN	0.0	454.0	454.0	443.3	443.0	0.0000	
835	Highway-190	MAN	0.0	455.0	455.0	443.9	443.9	0.0000	
837	Highway-190	MAN	0.0	456.0	456.0	444.7	444.7	0.0000	
839	Highway-190	MAN	0.0	457.0	457.0	445.6	445.6	0.0000	
841	Highway-190	MAN	0.0	458.0	458.0	446.9	446.9	0.0000	
843	Highway-190	MAN	0.0	459.0	459.0	448.8	448.8	0.0000	
845	Highway-190	MAN	0.0	460.0	460.0	449.6	449.6	0.0000	
847	Highway-190	MAN	0.0	461.0	461.0	450.4	450.4	0.0000	
849	Highway-190	MAN	0.0	462.0	462.0	451.4	451.4	0.0000	
851	Highway-190	MAN	0.0	463.0	463.0	0.0	452.8	0.0000	
852	Airport	EPI	75.0	430.0	430.0	417.5	417.3	0.0020	as-built
854	Airport	EPI	989.1	432.0	430.0	419.2	417.5	0.0018	as-built
856	Airport	EPI	90.0	432.0	432.0	419.4	419.2	0.0018	as-built
858	Airport	EPI	910.0	430.0	432.0	421.0	419.4	0.0018	as-built
860	Airport	EPI	1000.0	436.0	430.0	422.8	421.0	0.0018	as-built
862	Airport	EPI	1000.0	438.0	436.0	424.6	422.8	0.0018	as-built
864	Airport	EPI	1000.0	439.0	438.0	426.4	424.6	0.0018	as-built
866	Airport	EPI	660.0	439.0	439.0	427.6	426.4	0.0018	as-built
868	Airport	EPI	660.1	441.0	439.0	428.8	427.6	0.0018	as-built
870	Airport	EPI	894.0	440.0	441.0	430.0	428.9	0.0012	as-built
872	Airport	EPI	175.1	438.0	440.0	430.2	430.0	0.0012	as-built
874	Airport	EPI	550.0	437.0	438.0	430.8	430.2	0.0012	as-built
876	Airport	EPI	952.6	434.0	437.0	416.5	414.8	0.0018	as-built
878	Airport	EPI	665.3	432.0	434.0	417.6	416.5	0.0016	as-built
880	Airport	EPI	672.1	433.0	432.0	418.7	417.6	0.0016	as-built
882	Airport	EPI	431.7	434.0	433.0	419.5	418.7	0.0020	as-built
884	Airport	EPI	635.5	432.0	434.0	420.9	419.5	0.0020	as-built
886	Airport	EPI	623.7	430.0	432.0	422.1	420.9	0.0020	as-built
888	Airport	EPI	618.8	428.0	430.0	423.3	422.1	0.0020	as-built
853	Airport	MAN	0.0	430.0	430.0	417.5	417.5	0.0000	
855	Airport	MAN	0.0	432.0	432.0	419.2	419.2	0.0000	
857	Airport	MAN	0.0	432.0	432.0	419.4	419.4	0.0000	
859	Airport	MAN	0.0	430.0	430.0	421.0	421.0	0.0000	
861	Airport	MAN	0.0	436.0	436.0	422.8	422.8	0.0000	
863	Airport	MAN	0.0	438.0	438.0	424.6	424.6	0.0000	
865	Airport	MAN	0.0	439.0	439.0	426.4	426.4	0.0000	
867	Airport	MAN	0.0	439.0	439.0	427.6	427.6	0.0000	
869	Airport	MAN	0.0	441.0	441.0	428.9	428.8	0.0000	
871	Airport	MAN	0.0	440.0	440.0	430.0	430.0	0.0000	
873	Airport	MAN	0.0	438.0	438.0	430.2	430.2	0.0000	
875	Airport	PUM	0.0	437.0	437.0	414.8	414.8	0.0000	as-built
877	Airport	MAN	0.0	434.0	434.0	416.5	416.5	0.0000	
879	Airport	MAN	0.0	432.0	432.0	417.6	417.6	0.0000	
881	Airport	MAN	0.0	433.0	433.0	418.7	418.7	0.0000	
883	Airport	MAN	0.0	434.0	434.0	419.5	419.5	0.0000	
885	Airport	MAN	0.0	432.0	432.0	420.9	420.9	0.0000	
887	Airport	MAN	0.0	430.0	430.0	422.1	422.1	0.0000	
889	Airport	MAN	0.0	428.0	428.0	0.0	423.3	0.0000	

Appendix C

HYDRAULIC MODEL RESULTS

Pump (PUM)

ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
	Elevations				Maximum Values					
319	412.00	412.00	0.00	Intake:	1.24	0.00	0.00	0.00	1.24	No
overflow available										
				Discharge:	1.24	0.00	0.00	0.00	1.24	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	Heads Vel	Heads Friction	Heads Elev	Heads Pressure	HP	Note
318	2575.00	412.00	417.00	8.45	1.24	0.00	1.24	3.19	12.22	7.19	19.41	2.7	
		419.19	424.00	-0.00279	0.00	0.00							

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	d/D Par/Repl	HGL Up/Dn	Note
321	333.00	419.19	424.00	12.00	1.31	0.00	1.31	0.86	1.37	0.00	420.31	
		418.69	424.00	0.00150	0.00	0.00		1.67	95.67	0.00	419.80	
Surcharged												
323	330.00	418.69	424.00	12.00	1.31	0.00	1.31	0.86	1.38	0.00	419.80	

		418.19	425.00	0.00152	0.00	0.00		1.67	95.24	0.00	419.29
Surcharged											
325	336.00	418.19	425.00	12.00	1.31	0.00	1.31	0.86	1.36	0.00	419.29
		417.69	425.00	0.00149	0.00	0.00		1.67	96.10	0.00	418.77
Surcharged											
327	415.00	417.69	425.00	12.00	1.31	0.00	1.31	0.86	1.37	0.00	418.77
		417.07	426.00	0.00149	0.00	0.00		1.67	95.92	0.00	418.15
Surcharged											
329	333.00	417.07	426.00	12.00	1.31	0.00	1.31	0.85	1.38	0.00	418.15
		416.56	427.00	0.00153	0.00	0.00		1.67	94.73	0.00	417.64
Surcharged											
331	180.00	416.56	427.00	12.00	1.37	0.00	1.37	1.00	1.34	4.00	417.64
Overloaded											
		416.30	428.00	0.00144	0.00	0.00		1.74	101.87	15.00	417.30
Surcharged											
333	400.00	416.30	428.00	12.00	1.37	0.00	1.37	0.89	1.38	0.00	417.19
		415.69	429.00	0.00152	0.00	0.00		1.84	99.14	0.00	416.58
335	325.00	415.69	429.00	12.00	1.37	0.00	1.37	0.55	2.83	0.00	416.24
		413.61	430.00	0.00640	0.00	0.00		3.07	48.39	0.00	414.16

Pump (PUM)

	Elevations			Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
479	395.20	395.20	0.00	Intake:	0.17	0.00	0.00	0.00	0.17	No overflow available
				Discharge:	0.17	0.00	0.00	0.00	0.17	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

		Invert	Ground	Diam	Flow	Heads

ID/Name	Length	Up/Dn	Up/Dn	Slope	San/Inf	Mis/Sto	DesignQ	Vel	Friction	Elev	Pressure	HP
Note												
478	1314.74	395.20	411.00	6.00	0.17	0.00	0.17	0.87	0.83	12.55	13.38	0.3
		407.75	410.86	-0.00955	0.00	0.00						

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	Par/Repl	HGL Up/Dn
Note											
476	435.74	405.71	410.86	10.00	0.17	0.00	0.17	0.46	0.49	0.00	406.09
		405.49	411.00	0.00050	0.00	0.00		0.69	34.79	0.00	405.87
474	440.00	405.49	411.00	10.00	0.39	0.00	0.39	0.41	1.38	0.00	405.83
		403.72	412.00	0.00402	0.00	0.00		1.84	28.27	0.00	404.06
472	425.00	403.62	412.00	12.00	0.39	0.00	0.39	0.44	1.19	0.00	404.06
		403.14	413.00	0.00113	0.00	0.00		1.15	32.81	0.00	403.58
470	500.00	402.94	413.00	12.00	0.39	0.00	0.39	0.39	1.50	0.00	403.33
		402.04	414.00	0.00180	0.00	0.00		1.36	25.99	0.00	402.48
468	300.00	402.04	414.00	12.00	0.39	0.00	0.39	0.44	1.22	0.00	402.48
		401.68	415.00	0.00120	0.00	0.00		1.17	31.83	0.00	402.12
466	200.00	401.68	415.00	12.00	0.39	0.00	0.39	0.35	1.85	0.00	402.03
		401.13	415.00	0.00275	0.00	0.00		1.56	21.03	0.00	401.48
464	309.00	399.14	415.00	36.00	0.39	0.00	0.39	0.10	28.18	0.00	399.45
		398.58	416.00	0.00181	0.00	0.00		1.28	1.38	0.00	398.89

Pump (PUM)

ID/Name	Elevations Intake	Elevations Discharge	Elevations Overflow	Maximum Values San	Maximum Values Inf	Maximum Values Mis	Maximum Values Sto	Maximum Values Design	Note

337	398.58	398.58	0.00	Intake:	0.54	0.00	0.00	0.00	0.54	No
overflow available										
				Discharge:	0.54	0.00	0.00	0.00	0.54	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	Heads Vel	Heads Friction	Heads Elev	Heads Pressure	HP
Note												
336	1160.00	398.58	416.00	6.00	0.54	0.00	0.54	2.73	6.14	18.34	24.48	1.5
		416.92	419.00	-0.01581	0.00	0.00						

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	d/D Par/Repl	HGL Up/Dn
Note											
339	650.00	416.80	419.00	12.00	0.54	0.00	0.54	0.45	1.58	0.00	417.25
		415.50	422.00	0.00200	0.00	0.00		1.54	33.86	0.00	415.95
341	650.00	415.50	422.00	12.00	0.54	0.00	0.54	0.45	1.58	0.00	415.95
		414.20	424.00	0.00200	0.00	0.00		1.54	33.86	0.00	414.65
343	150.00	414.16	424.00	12.00	0.54	0.00	0.54	0.49	1.38	0.00	414.65
		413.93	424.00	0.00153	0.00	0.00		1.40	38.68	0.00	414.42
345	385.00	413.93	424.00	12.00	0.54	0.00	0.54	0.49	1.37	0.00	414.42
		413.35	424.00	0.00151	0.00	0.00		1.40	39.02	0.00	413.84
347	280.00	413.35	424.00	12.00	0.54	0.00	0.54	0.49	1.37	0.00	413.84
		412.93	425.00	0.00150	0.00	0.00		1.39	39.10	0.00	413.47
349	340.00	412.93	425.00	12.00	0.64	0.00	0.64	0.54	1.37	0.00	413.47
		412.42	427.00	0.00150	0.00	0.00		1.47	46.99	0.00	412.96

351	335.00	412.42	427.00	12.00	0.64	0.00	0.64	0.54	1.37	0.00	412.96
		411.92	429.00	0.00149	0.00	0.00		1.47	47.11	0.00	412.46
114	545.00	459.22	465.00	15.00	0.00	0.00	0.00	0.00	2.28	0.00	459.22
		458.53	464.00	0.00127	0.00	0.00		0.20	0.00	0.00	458.85
112	490.00	458.53	464.00	15.00	0.24	0.00	0.24	0.26	2.28	0.00	458.85
		457.91	463.00	0.00127	0.00	0.00		1.03	10.68	0.00	458.23
110	385.00	457.91	463.00	15.00	0.24	0.00	0.24	0.26	2.29	0.00	458.23
		457.42	462.00	0.00127	0.00	0.00		1.04	10.65	0.00	457.74
108	130.00	457.42	462.00	18.00	0.24	0.00	0.24	0.18	4.84	0.00	457.69
		457.14	462.00	0.00215	0.00	0.00		1.25	5.04	0.00	457.43
106	215.00	457.14	462.00	18.00	0.24	0.00	0.24	0.19	4.44	0.00	457.43
		456.75	462.00	0.00181	0.00	0.00		1.17	5.49	0.00	457.04
104	185.00	456.75	462.00	18.00	0.24	0.00	0.24	0.19	4.47	0.00	457.03
		456.41	461.00	0.00184	0.00	0.00		1.18	5.45	0.00	456.69
102	295.00	456.41	461.00	18.00	0.24	0.00	0.24	0.19	4.50	0.00	456.69
		455.86	461.00	0.00186	0.00	0.00		1.19	5.41	0.00	456.15
100	335.00	455.86	461.00	18.00	0.24	0.00	0.24	0.19	4.45	0.00	456.15
		455.25	460.00	0.00182	0.00	0.00		1.18	5.48	0.00	455.54
98	275.00	455.25	460.00	18.00	0.24	0.00	0.24	0.19	4.49	0.00	455.53
		454.74	460.00	0.00185	0.00	0.00		1.18	5.43	0.00	455.04
96	435.00	454.74	460.00	18.00	0.27	0.00	0.27	0.20	4.47	0.00	455.04
		453.94	460.00	0.00184	0.00	0.00		1.21	5.97	0.00	454.24
94	240.00	453.94	460.00	18.00	0.27	0.00	0.27	0.20	4.46	0.00	454.24
		453.50	459.00	0.00183	0.00	0.00		1.21	5.98	0.00	453.80
92	395.00	453.50	459.00	18.00	0.27	0.00	0.27	0.20	4.48	0.00	453.80
		452.77	459.00	0.00185	0.00	0.00		1.22	5.96	0.00	453.07
90	330.00	452.77	459.00	18.00	0.27	0.00	0.27	0.20	4.48	0.00	453.07
		452.16	457.00	0.00185	0.00	0.00		1.22	5.96	0.00	452.46
88	420.00	452.16	457.00	18.00	0.27	0.00	0.27	0.20	4.46	0.00	452.46

		451.39	457.00	0.00183	0.00	0.00		1.21	5.98	0.00	451.76
86	330.00	451.39	457.00	18.00	0.40	0.00	0.40	0.25	4.33	0.00	451.76
		450.82	456.00	0.00173	0.00	0.00		1.32	9.27	0.00	451.19
84	309.15	450.72	456.00	18.00	0.40	0.00	0.40	0.26	3.61	0.00	451.11
		450.35	456.00	0.00120	0.00	0.00		1.14	11.14	0.00	450.74
82	334.77	450.25	456.00	18.00	0.40	0.00	0.40	0.26	3.60	0.00	450.64
		449.85	455.00	0.00119	0.00	0.00		1.14	11.14	0.00	450.24
80	367.21	445.75	455.00	18.00	0.40	0.00	0.40	0.26	3.61	0.00	446.14
		445.31	456.00	0.00120	0.00	0.00		1.14	11.13	0.00	445.70
78	335.00	445.21	456.00	18.00	0.40	0.00	0.40	0.26	3.65	0.00	445.60
		444.80	456.00	0.00122	0.00	0.00		1.15	11.01	0.00	445.19
76	670.00	444.80	456.00	18.00	0.40	0.00	0.40	0.26	3.60	0.00	445.19
		444.00	456.00	0.00119	0.00	0.00		1.14	11.15	0.00	444.39
74	335.00	444.00	456.00	18.00	0.40	0.00	0.40	0.26	3.60	0.00	444.39
		443.60	456.00	0.00119	0.00	0.00		1.14	11.15	0.00	444.16
72	615.66	443.60	456.00	18.00	0.87	0.00	0.87	0.37	3.64	0.00	444.16
		442.85	454.00	0.00122	0.00	0.00		1.42	23.90	0.00	443.53
70	1236.00	442.85	454.00	18.00	1.23	0.00	1.23	0.45	3.61	0.00	443.53
		441.37	451.00	0.00120	0.00	0.00		1.56	34.01	0.00	442.05
68	550.49	441.27	451.00	18.00	1.45	0.00	1.45	0.50	3.61	0.00	442.02
		440.61	450.00	0.00120	0.00	0.00		1.65	40.20	0.00	441.36
66	574.97	440.51	450.00	21.00	1.54	0.00	1.54	0.38	6.32	0.00	441.17
		439.58	448.00	0.00162	0.00	0.00		1.83	24.41	0.00	440.30
64	520.00	439.58	448.00	21.00	1.54	0.00	1.54	0.41	5.47	0.00	440.30
		438.95	446.00	0.00121	0.00	0.00		1.66	28.20	0.00	439.67
62	340.00	438.51	446.00	21.00	1.71	0.00	1.71	0.48	4.59	0.00	439.34
		438.22	446.00	0.00085	0.00	0.00		1.50	37.13	0.00	439.06
60	340.00	438.22	446.00	21.00	1.71	0.00	1.71	0.48	4.51	0.00	439.06
		437.94	445.00	0.00082	0.00	0.00		1.48	37.79	0.00	438.78

58	340.00	437.94	445.00	21.00	1.71	0.00	1.71	0.28	13.29	0.00	438.42
		435.51	444.00	0.00715	0.00	0.00		3.19	12.83	0.00	436.45
194	434.00	459.51	464.00	18.00	1.93	0.00	1.93	0.40	7.08	0.00	460.12
		457.51	465.00	0.00461	0.00	0.00		2.89	27.33	0.00	458.17
192	310.00	457.41	465.00	18.00	1.93	0.00	1.93	0.51	4.66	0.00	458.17
		456.79	465.00	0.00200	0.00	0.00		2.15	41.49	0.00	457.55
190	325.00	456.79	465.00	18.00	1.93	0.00	1.93	0.51	4.66	0.00	457.55
		456.14	466.00	0.00200	0.00	0.00		2.15	41.49	0.00	456.90
188	333.00	456.14	466.00	18.00	1.93	0.00	1.93	0.51	4.64	0.00	456.90
		455.48	469.00	0.00198	0.00	0.00		2.14	41.68	0.00	456.24
186	131.00	455.48	469.00	18.00	1.93	0.00	1.93	0.42	6.57	0.00	456.11
		454.96	469.00	0.00397	0.00	0.00		2.73	29.45	0.00	455.86
184	339.00	454.96	469.00	18.00	1.93	0.00	1.93	0.60	3.44	0.00	455.86
		454.59	467.00	0.00109	0.00	0.00		1.74	56.16	0.00	455.49
182	348.00	454.59	467.00	18.00	1.93	0.00	1.93	0.53	4.29	0.00	455.38
		454.00	465.00	0.00170	0.00	0.00		2.03	45.06	0.00	454.84
180	400.00	454.00	465.00	18.00	1.93	0.00	1.93	0.56	3.90	0.00	454.84
		453.44	463.00	0.00140	0.00	0.00		1.89	49.59	0.00	454.31
178	400.00	453.44	463.00	18.00	2.24	0.00	2.24	0.58	4.23	0.00	454.31
		452.78	462.00	0.00165	0.00	0.00		2.10	52.88	0.00	453.65
176	82.00	452.78	462.00	18.00	2.24	0.00	2.24	0.34	11.28	0.00	453.29
		451.82	460.00	0.01171	0.00	0.00		4.14	19.85	0.00	453.02
174	517.66	452.48	460.00	21.00	2.24	0.00	2.24	0.31	13.67	0.00	453.02
		448.57	458.00	0.00755	0.00	0.00		3.48	16.39	0.00	449.41
172	400.00	448.57	458.00	21.00	2.31	0.00	2.31	0.48	6.09	0.00	449.41
		447.97	456.00	0.00150	0.00	0.00		2.01	37.94	0.00	448.82
170	135.50	447.97	456.00	21.00	2.31	0.00	2.31	0.48	6.04	0.00	448.82
		447.77	456.00	0.00148	0.00	0.00		1.99	38.25	0.00	448.62
168	28.29	447.77	456.00	21.00	2.31	0.00	2.31	0.46	6.61	0.00	448.58

		447.72	456.00	0.00177	0.00	0.00		2.12	34.96	0.00	448.54
166	481.00	447.72	456.00	21.00	2.31	0.00	2.31	0.47	6.37	0.00	448.54
		446.93	455.00	0.00164	0.00	0.00		2.07	36.26	0.00	447.75
164	172.00	446.93	455.00	21.00	2.31	0.00	2.31	0.40	8.81	0.00	447.62
		446.39	455.00	0.00314	0.00	0.00		2.61	26.23	0.00	447.08
162	419.00	446.39	455.00	21.00	2.31	0.00	2.31	0.39	9.06	0.00	447.07
		445.00	452.50	0.00332	0.00	0.00		2.66	25.51	0.00	445.74
160	33.60	445.00	452.50	21.00	2.31	0.00	2.31	0.40	8.58	0.00	445.74
		444.90	452.50	0.00298	0.00	0.00		2.57	26.94	0.00	445.74
158	393.00	444.90	452.50	21.00	2.31	0.00	2.31	0.48	6.14	0.00	445.74
		444.30	452.00	0.00153	0.00	0.00		2.02	37.61	0.00	445.14
156	336.00	444.30	452.00	21.00	2.31	0.00	2.31	0.44	7.07	0.00	445.08
		443.62	451.00	0.00202	0.00	0.00		2.23	32.67	0.00	444.43
154	368.00	443.62	451.00	21.00	2.47	0.00	2.47	0.46	7.05	0.00	444.43
		442.88	450.00	0.00201	0.00	0.00		2.27	35.07	0.00	443.69
152	253.00	442.88	450.00	21.00	2.47	0.00	2.47	0.46	7.13	0.00	443.68
		442.36	449.50	0.00206	0.00	0.00		2.28	34.69	0.00	443.17
150	44.60	442.36	449.50	21.00	2.47	0.00	2.47	0.46	7.06	0.00	443.17
		442.27	449.20	0.00202	0.00	0.00		2.27	35.01	0.00	443.08
148	411.00	442.27	449.20	21.00	2.47	0.00	2.47	0.46	7.07	0.00	443.08
		441.44	447.70	0.00202	0.00	0.00		2.27	34.99	0.00	442.30
222	290.00	442.15	447.70	18.00	0.00	0.00	0.00	0.00	3.30	0.00	442.15
		441.86	449.00	0.00100	0.00	0.00		0.20	0.00	0.00	441.86
220	329.00	441.86	449.00	18.00	0.00	0.00	0.00	0.00	6.43	0.00	441.86
		440.61	449.00	0.00380	0.00	0.00		0.20	0.00	0.00	441.39
278	437.00	446.00	453.00	15.00	0.00	0.00	0.00	0.00	3.79	0.00	446.00
		444.47	452.00	0.00350	0.00	0.00		0.20	0.00	0.00	444.73
276	450.00	444.47	452.00	15.00	0.24	0.00	0.24	0.21	3.80	0.00	444.73
		442.89	451.00	0.00351	0.00	0.00		1.51	6.45	0.00	443.15

274	450.00	442.89	451.00	15.00	0.24	0.00	0.24	0.21	3.80	0.00	443.15
		441.31	450.00	0.00351	0.00	0.00		1.51	6.45	0.00	441.57
272	407.00	441.31	450.00	15.00	0.24	0.00	0.24	0.16	7.03	0.00	441.51
		436.42	449.00	0.01201	0.00	0.00		2.39	3.49	0.00	437.03
286	250.00	424.96	434.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	424.96
		424.46	432.00	0.00200	0.00	0.00		0.20	0.00	0.00	424.46
284	400.00	424.46	432.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	424.46
		423.66	433.00	0.00200	0.00	0.00		0.20	0.00	0.00	423.66
282	300.00	423.66	433.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	423.66
		423.06	430.50	0.00200	0.00	0.00		0.20	0.00	0.00	423.06
280	400.00	423.06	430.50	10.00	0.00	0.00	0.00	0.00	0.97	0.00	423.06
		422.26	435.00	0.00200	0.00	0.00		0.20	0.00	0.00	422.26
292	400.00	430.63	439.00	10.00	0.00	0.00	0.00	0.00	1.00	0.00	430.63
		429.78	437.00	0.00213	0.00	0.00		0.20	0.00	0.00	429.78
290	450.00	429.78	437.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	429.78
		428.88	440.00	0.00200	0.00	0.00		0.20	0.00	0.00	428.88
288	450.00	428.88	440.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	428.88
		427.98	442.00	0.00200	0.00	0.00		0.20	0.00	0.00	428.14
316	142.00	410.65	422.50	42.00	0.57	0.00	0.57	0.09	49.58	0.00	410.98
		410.30	422.50	0.00246	0.00	0.00		1.56	1.16	0.00	410.63

Pump (PUM)

ID/Name	Elevations				Maximum Values					
	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
301	410.30	410.30	0.00	Intake:	0.57	0.00	0.00	0.00	0.57	No
overflow available				Discharge:	0.57	0.00	0.00	0.00	0.57	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	Heads Vel	Heads Friction	Heads Elev	Heads Pressure	HP
300	80.00	410.30	422.50	6.00	0.57	0.00	0.57	2.92	0.48	9.46	9.94	0.6
		419.76	423.00	-0.11825	0.00	0.00						

Existing Pipe (EPI)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	Par/Repl	HGL Up/Dn
303	499.00	419.76	423.00	12.00	0.57	0.00	0.57	0.51	1.37	0.00	420.27
		419.01	424.50	0.00150	0.00	0.00		1.42	41.90	0.00	419.52
305	504.00	419.01	424.50	12.00	0.57	0.00	0.57	0.51	1.36	0.00	419.52
		418.26	425.00	0.00149	0.00	0.00		1.42	42.11	0.00	418.77
307	176.00	418.26	425.00	12.00	0.57	0.00	0.57	0.47	1.58	0.00	418.73
		417.91	425.50	0.00199	0.00	0.00		1.57	36.43	0.00	418.42
309	579.00	417.91	425.50	12.00	0.57	0.00	0.57	0.51	1.35	0.00	418.42
		417.07	426.50	0.00145	0.00	0.00		1.41	42.65	0.00	417.58
311	331.00	417.04	426.50	12.00	0.57	0.00	0.57	0.51	1.37	0.00	417.55
		416.54	427.00	0.00151	0.00	0.00		1.43	41.80	0.00	417.05
313	284.00	416.54	427.00	12.00	0.57	0.00	0.57	0.51	1.38	0.00	417.05
		416.11	430.00	0.00151	0.00	0.00		1.43	41.75	0.00	416.64
315	45.00	416.11	430.00	12.00	0.57	0.00	0.57	0.53	1.29	0.00	416.64
		416.05	430.00	0.00133	0.00	0.00		1.37	44.49	0.00	416.58
370	210.00	414.19	423.00	8.00	0.00	0.00	0.00	0.00	0.54	0.00	414.19
		413.77	424.00	0.00200	0.00	0.00		0.20	0.00	0.00	413.77

368	266.00	413.77	424.00	10.00	0.00	0.00	0.00	0.00	0.84	0.00	413.77
		413.37	425.00	0.00150	0.00	0.00		0.20	0.00	0.00	413.68
366	266.00	413.37	425.00	10.00	0.20	0.00	0.20	0.37	0.84	0.00	413.68
		412.97	426.00	0.00150	0.00	0.00		1.06	23.35	0.00	413.28
364	284.00	412.97	426.00	12.00	0.20	0.00	0.20	0.30	1.24	0.00	413.27
		412.62	426.00	0.00123	0.00	0.00		0.96	15.86	0.00	412.92
362	284.20	412.62	426.00	12.00	0.20	0.00	0.20	0.30	1.24	0.00	412.92
		412.27	429.00	0.00123	0.00	0.00		0.96	15.87	0.00	412.57
450	25.00	411.80	429.00	18.00	0.84	0.00	0.84	0.21	11.98	0.00	412.12
		411.47	429.00	0.01320	0.00	0.00		3.38	7.02	0.00	411.79
434	167.00	422.00	434.00	12.00	0.03	0.00	0.03	0.08	3.87	0.00	422.08
		420.00	430.00	0.01198	0.00	0.00		1.31	0.81	0.00	420.08
432	372.00	420.00	430.00	12.00	0.03	0.00	0.03	0.08	3.87	0.00	420.08
		415.54	425.00	0.01199	0.00	0.00		1.31	0.81	0.00	415.71
430	157.00	415.54	425.00	12.00	0.16	0.00	0.16	0.17	3.85	0.00	415.71
		413.68	425.00	0.01185	0.00	0.00		2.13	4.17	0.00	413.85
448	85.00	416.17	421.00	12.00	0.02	0.00	0.02	0.10	1.49	0.00	416.27
		416.02	421.00	0.00176	0.00	0.00		0.61	1.41	0.00	416.12
446	230.00	416.02	421.00	12.00	0.02	0.00	0.02	0.10	1.51	0.00	416.12
		415.60	421.00	0.00183	0.00	0.00		0.62	1.39	0.00	415.70
444	460.00	415.60	421.00	12.00	0.02	0.00	0.02	0.10	1.50	0.00	415.70
		414.77	422.00	0.00180	0.00	0.00		0.62	1.40	0.00	414.87
442	460.00	414.77	422.00	12.00	0.02	0.00	0.02	0.10	1.49	0.00	414.87
		413.95	422.00	0.00178	0.00	0.00		0.61	1.41	0.00	414.05
440	460.00	413.95	422.00	12.00	0.02	0.00	0.02	0.10	1.50	0.00	414.05
		413.12	423.00	0.00180	0.00	0.00		0.62	1.40	0.00	413.30
438	460.00	413.20	423.00	12.00	0.02	0.00	0.02	0.10	1.57	0.00	413.30
		412.29	424.00	0.00198	0.00	0.00		0.64	1.34	0.00	412.39

436	205.00	412.29	424.00	12.00	0.02	0.00	0.02	0.10	1.50	0.00	412.39
		411.92	425.00	0.00180	0.00	0.00		0.62	1.40	0.00	412.02
428	192.00	411.43	425.00	18.00	0.18	0.00	0.18	0.16	4.99	0.00	411.66
		410.99	425.00	0.00229	0.00	0.00		1.18	3.51	0.00	411.23
426	112.00	410.99	425.00	18.00	0.18	0.00	0.18	0.16	4.83	0.00	411.23
		410.75	423.00	0.00214	0.00	0.00		1.15	3.63	0.00	410.99
424	420.00	410.75	423.00	18.00	0.18	0.00	0.18	0.16	4.69	0.00	410.99
		409.90	421.00	0.00202	0.00	0.00		1.13	3.74	0.00	410.14
422	325.00	409.90	421.00	18.00	0.18	0.00	0.18	0.16	4.66	0.00	410.14
		409.25	421.00	0.00200	0.00	0.00		1.12	3.76	0.00	409.49
420	320.00	409.25	421.00	18.00	0.18	0.00	0.18	0.16	4.66	0.00	409.49
		408.61	420.00	0.00200	0.00	0.00		1.12	3.76	0.00	408.85
418	345.00	408.36	420.00	21.00	0.18	0.00	0.18	0.15	5.87	0.00	408.62
		407.88	420.00	0.00139	0.00	0.00		0.98	2.99	0.00	408.14
416	490.00	407.88	420.00	21.00	0.18	0.00	0.18	0.15	5.90	0.00	408.13
		407.19	420.00	0.00141	0.00	0.00		0.99	2.97	0.00	407.45
414	493.00	407.19	420.00	21.00	0.18	0.00	0.18	0.15	5.88	0.00	407.45
		406.50	418.00	0.00140	0.00	0.00		0.98	2.98	0.00	406.76
412	318.00	406.50	418.00	21.00	0.18	0.00	0.18	0.15	5.85	0.00	406.76
		406.06	417.00	0.00138	0.00	0.00		0.98	3.00	0.00	406.32
410	912.00	406.06	417.00	21.00	0.18	0.00	0.18	0.15	5.89	0.00	406.32
		404.78	414.00	0.00140	0.00	0.00		0.98	2.98	0.00	405.04
408	30.00	398.78	414.00	72.00	0.23	0.00	0.23	0.00	1249.64	0.00	398.79
		396.13	414.00	0.08833	0.00	0.00		0.35	0.02	0.00	396.14

Pump (PUM)

	Elevations			Maximum Values					
ID/Name	Intake	Discharge	Overflow	San	Inf	Mis	Sto	Design	Note
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407	396.13	396.13	0.00	Intake:	0.23	0.00	0.00	0.00	0.23	No
overflow available										
				Discharge:	0.23	0.00	0.00	0.00	0.23	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	Heads Vel	Heads Friction	Heads Elev	Heads Pressure	HP
406	25.00	396.13	414.00	6.00	0.23	0.00	0.23	1.19	0.03	12.13	12.16	0.3
		408.26	414.00	-0.48520	0.00	0.00						

Existing Pipe (EPI)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	Par/Repl	HGL Up/Dn
404	394.00	408.26	413.00	24.00	0.23	0.00	0.23	0.15	7.06	0.00	408.57
		407.87	414.00	0.00099	0.00	0.00		0.93	3.30	0.00	408.18
402	440.00	407.87	414.00	24.00	0.23	0.00	0.23	0.15	7.10	0.00	408.18
		407.43	416.00	0.00100	0.00	0.00		0.93	3.28	0.00	407.74
400	440.00	407.43	416.00	24.00	0.23	0.00	0.23	0.15	7.10	0.00	407.74
		406.99	417.00	0.00100	0.00	0.00		0.93	3.28	0.00	407.30
398	275.00	406.99	417.00	24.00	0.23	0.00	0.23	0.15	7.03	0.00	407.30
		406.72	416.00	0.00098	0.00	0.00		0.93	3.31	0.00	407.03
396	65.00	406.72	416.00	24.00	0.23	0.00	0.23	0.15	7.37	0.00	407.02
		406.65	416.00	0.00108	0.00	0.00		0.96	3.16	0.00	406.95
394	115.00	406.60	416.00	27.00	0.23	0.00	0.23	0.13	9.93	0.00	406.89
		406.48	417.00	0.00104	0.00	0.00		0.93	2.34	0.00	406.77

392	275.47	406.48	417.00	27.00	0.23	0.00	0.23	0.13	9.62	0.00	406.77
		406.21	417.00	0.00098	0.00	0.00		0.91	2.42	0.00	406.50
390	280.00	406.21	417.00	27.00	0.23	0.00	0.23	0.13	9.72	0.00	406.50
		405.93	417.00	0.00100	0.00	0.00		0.92	2.39	0.00	406.22
388	265.00	405.91	417.00	27.00	0.23	0.00	0.23	0.13	9.63	0.00	406.20
		405.65	418.00	0.00098	0.00	0.00		0.91	2.42	0.00	406.10
386	500.00	405.65	418.00	27.00	0.60	0.00	0.60	0.20	9.72	0.00	406.10
		405.15	418.00	0.00100	0.00	0.00		1.18	6.21	0.00	405.62
384	280.03	405.15	418.00	27.00	0.60	0.00	0.60	0.21	9.18	0.00	405.62
		404.90	418.00	0.00089	0.00	0.00		1.13	6.57	0.00	405.37
382	542.67	404.90	418.00	27.00	0.60	0.00	0.60	0.20	9.70	0.00	405.36
		404.36	419.00	0.00100	0.00	0.00		1.18	6.23	0.00	404.86
380	545.00	404.36	419.00	27.00	0.82	0.00	0.82	0.22	10.70	0.00	404.86
		403.70	419.00	0.00121	0.00	0.00		1.38	7.68	0.00	404.20
378	100.00	399.66	419.00	27.00	1.02	0.00	1.02	0.25	10.19	0.00	400.23
		399.55	421.00	0.00110	0.00	0.00		1.41	10.01	0.00	400.12

Pump (PUM)

ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
	Elevations				Maximum Values					
377	399.50	399.50	0.00	Intake:	1.02	0.00	0.00	0.00	1.02	No overflow available
				Discharge:	1.02	0.00	0.00	0.00	1.02	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	Par/Repl	HGL Up/Dn	Note

376	65.00	414.70	421.00	18.00	1.02	0.00	1.02	0.34	5.17	0.00	415.20
		414.54	421.00	0.00246	0.00	0.00		1.89	19.73	0.00	415.05
374	425.00	414.54	421.00	18.00	1.02	0.00	1.02	0.34	5.08	0.00	415.05
		413.53	423.00	0.00238	0.00	0.00		1.87	20.08	0.00	414.09
372	39.60	413.53	423.00	27.00	1.31	0.00	1.31	0.25	13.82	0.00	414.09
		413.45	423.00	0.00202	0.00	0.00		1.89	9.49	0.00	414.01
360	415.20	413.35	423.00	27.00	1.31	0.00	1.31	0.25	13.15	0.00	413.92
		412.59	424.00	0.00183	0.00	0.00		1.82	9.97	0.00	413.16
358	450.00	412.53	424.00	27.00	1.31	0.00	1.31	0.25	13.59	0.00	413.09
		411.65	425.00	0.00196	0.00	0.00		1.87	9.65	0.00	412.21
356	446.00	411.65	425.00	27.00	1.31	0.00	1.31	0.25	13.65	0.00	412.21
		410.77	429.00	0.00197	0.00	0.00		1.87	9.61	0.00	411.61
353	55.86	410.67	429.00	27.00	1.31	0.00	1.31	0.25	13.64	0.00	411.61
		410.56	429.00	0.00197	0.00	0.00		1.87	9.62	0.00	411.61
451	425.00	410.47	429.00	18.00	2.15	0.00	2.15	0.76	2.68	0.00	411.61
		410.19	429.00	0.00066	0.00	0.00		1.51	80.43	0.00	411.33
453	425.00	410.19	429.00	18.00	2.15	0.00	2.15	0.76	2.68	0.00	411.33
		409.91	427.00	0.00066	0.00	0.00		1.51	80.43	0.00	411.05
455	212.00	409.91	427.00	18.00	2.15	0.00	2.15	0.76	2.68	0.00	411.04
		409.77	428.00	0.00066	0.00	0.00		1.51	80.33	0.00	410.93
457	212.00	409.77	428.00	18.00	2.24	0.00	2.24	0.78	2.68	0.00	410.93
		409.63	428.00	0.00066	0.00	0.00		1.52	83.58	0.00	410.79
459	40.00	409.63	428.00	30.00	2.24	0.00	2.24	0.34	11.15	0.00	410.50
		409.60	428.00	0.00075	0.00	0.00		1.48	20.08	0.00	410.50
461	55.00	409.60	428.00	30.00	2.24	0.00	2.24	0.24	24.55	0.00	410.50
		409.40	428.00	0.00364	0.00	0.00		2.68	9.12	0.00	410.50
463	45.00	409.40	428.00	30.00	2.24	0.00	2.24	0.23	27.14	0.00	410.50
		409.20	427.50	0.00444	0.00	0.00		2.88	8.25	0.00	410.50

560	255.00	440.80	445.00	10.00	0.33	0.00	0.33	0.55	0.68	0.00	441.26
		440.55	444.68	0.00098	0.00	0.00		1.07	48.70	0.00	441.01
558	375.00	440.31	444.68	12.00	0.33	0.00	0.33	0.54	0.71	0.00	440.85
		440.16	444.00	0.00040	0.00	0.00		0.76	46.89	0.00	440.71
556	285.00	440.16	444.00	12.00	0.33	0.00	0.33	0.55	0.69	0.00	440.71
		440.05	444.00	0.00039	0.00	0.00		0.75	47.73	0.00	440.60
554	170.00	440.05	444.00	12.00	0.33	0.00	0.33	0.49	0.86	0.00	440.54
		439.95	444.62	0.00059	0.00	0.00		0.87	38.67	0.00	440.48
552	150.00	439.88	444.62	15.00	0.62	0.00	0.62	0.48	1.66	0.00	440.48
		439.78	444.50	0.00067	0.00	0.00		1.07	37.68	0.00	440.40
550	50.00	439.78	444.50	15.00	0.62	0.00	0.62	0.49	1.57	0.00	440.40
		439.75	444.50	0.00060	0.00	0.00		1.03	39.72	0.00	440.38
548	456.00	439.75	444.50	15.00	0.62	0.00	0.62	0.51	1.50	0.00	440.38
		439.50	444.00	0.00055	0.00	0.00		1.00	41.55	0.00	440.15
546	414.00	439.50	444.00	15.00	0.62	0.00	0.62	0.52	1.44	0.00	440.15
		439.29	444.00	0.00051	0.00	0.00		0.97	43.20	0.00	439.94
544	857.00	439.29	444.00	15.00	0.62	0.00	0.62	0.52	1.45	0.00	439.94
		438.85	442.40	0.00051	0.00	0.00		0.97	42.94	0.00	439.50

Diversion (DIV)

	Elevations			Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
543	438.85	438.85	438.85	Intake:	0.62	0.00	0.00	0.00	0.62	
				Discharge:	0.62	0.00	0.00	0.00	0.62	
				Overflow:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

	Invert	Ground	Diam	Flow	d/D	HGL

ID/Name Note	Length	Up/Dn	Up/Dn	Slope	San/Inf	Mis/Sto	DesignQ	Vel	QMax/%Cap	Par/Repl	Up/Dn
542	160.00	438.85	442.40	15.00	0.62	0.00	0.62	0.49	1.60	0.00	439.46
		438.75	443.00	0.00062	0.00	0.00		1.04	38.92	0.00	439.42
540	175.00	438.75	443.00	15.00	0.62	0.00	0.62	0.50	1.53	0.00	439.42
		438.65	443.00	0.00057	0.00	0.00		1.01	40.70	0.00	439.42
538	175.00	438.65	443.00	15.00	0.94	0.00	0.94	0.61	1.61	0.00	439.42
		438.54	444.00	0.00063	0.00	0.00		1.18	58.33	0.00	439.31
536	210.00	438.54	444.00	15.00	0.94	0.00	0.94	0.62	1.59	0.00	439.31
		438.41	444.00	0.00062	0.00	0.00		1.18	58.78	0.00	439.21
534	145.00	438.41	444.00	15.00	0.94	0.00	0.94	0.64	1.51	0.00	439.21
		438.33	445.00	0.00055	0.00	0.00		1.13	62.26	0.00	439.13
532	279.00	438.33	445.00	15.00	0.94	0.00	0.94	0.62	1.58	0.00	439.11
		438.16	445.00	0.00061	0.00	0.00		1.17	59.24	0.00	438.94
530	135.00	438.16	445.00	15.00	0.94	0.00	0.94	0.63	1.56	0.00	438.94
		438.08	446.50	0.00059	0.00	0.00		1.16	60.07	0.00	438.86
598	300.00	447.58	455.00	15.00	0.27	0.00	0.27	0.23	3.33	0.00	447.86
		446.77	454.00	0.00270	0.00	0.00		1.40	8.00	0.00	447.05
596	150.00	446.77	454.00	15.00	0.27	0.00	0.27	0.23	3.35	0.00	447.05
		446.36	453.65	0.00273	0.00	0.00		1.41	7.95	0.00	446.64
594	300.00	446.36	453.65	15.00	0.27	0.00	0.27	0.23	3.33	0.00	446.64
		445.55	453.00	0.00270	0.00	0.00		1.40	8.00	0.00	445.84
592	300.00	445.55	453.00	15.00	0.27	0.00	0.27	0.23	3.31	0.00	445.84
		444.75	452.00	0.00267	0.00	0.00		1.40	8.05	0.00	445.04
590	175.00	444.75	452.00	15.00	0.27	0.00	0.27	0.23	3.36	0.00	445.03
		444.27	452.00	0.00274	0.00	0.00		1.41	7.94	0.00	444.55
588	175.00	444.27	452.00	15.00	0.27	0.00	0.27	0.23	3.32	0.00	444.55
		443.80	451.74	0.00269	0.00	0.00		1.40	8.02	0.00	444.35

586	445.00	443.80	451.74	15.00	1.05	0.00	1.05	0.44	3.29	0.00	444.35
		442.63	451.00	0.00263	0.00	0.00		2.01	31.84	0.00	443.23
584	350.00	442.63	451.00	15.00	1.13	0.00	1.13	0.48	3.01	0.00	443.23
		441.86	451.00	0.00220	0.00	0.00		1.93	37.63	0.00	442.46
582	300.00	441.86	451.00	15.00	1.13	0.00	1.13	0.48	3.01	0.00	442.46
		441.20	452.00	0.00220	0.00	0.00		1.93	37.63	0.00	441.80
580	400.00	441.20	452.00	15.00	1.13	0.00	1.13	0.48	3.01	0.00	441.80
		440.32	452.38	0.00220	0.00	0.00		1.93	37.63	0.00	441.04
578	380.00	440.32	452.38	15.00	1.13	0.00	1.13	0.57	2.18	0.00	441.04
		439.88	451.00	0.00116	0.00	0.00		1.55	51.87	0.00	440.61
576	400.00	439.88	451.00	15.00	1.13	0.00	1.13	0.58	2.13	0.00	440.61
		439.44	450.00	0.00110	0.00	0.00		1.52	53.22	0.00	440.25
574	375.00	439.44	450.00	15.00	1.33	0.00	1.33	0.64	2.12	0.00	440.25
		439.03	449.00	0.00109	0.00	0.00		1.60	62.75	0.00	439.84
572	360.00	439.03	449.00	15.00	1.33	0.00	1.33	0.64	2.14	0.00	439.83
		438.63	447.00	0.00111	0.00	0.00		1.61	62.24	0.00	439.43
570	190.00	438.63	447.00	15.00	1.33	0.00	1.33	0.64	2.13	0.00	439.43
		438.42	445.84	0.00111	0.00	0.00		1.60	62.41	0.00	439.29
568	30.00	438.42	445.84	18.00	1.33	0.00	1.33	0.46	3.81	0.00	439.29
		438.38	446.06	0.00133	0.00	0.00		1.66	34.94	0.00	439.29
616	445.00	446.38	451.00	12.00	0.00	0.00	0.00	0.00	1.58	0.00	446.38
		445.49	451.00	0.00200	0.00	0.00		0.20	0.00	0.00	445.49
614	350.00	445.49	451.00	12.00	0.00	0.00	0.00	0.00	1.58	0.00	445.49
		444.79	451.00	0.00200	0.00	0.00		0.20	0.00	0.00	444.79
612	300.00	444.79	451.00	12.00	0.00	0.00	0.00	0.00	1.58	0.00	444.79
		444.19	452.00	0.00200	0.00	0.00		0.20	0.00	0.00	444.19
610	400.00	444.19	452.00	12.00	0.00	0.00	0.00	0.00	1.58	0.00	444.19
		443.39	452.69	0.00200	0.00	0.00		0.20	0.00	0.00	443.39
608	380.00	443.29	452.69	12.00	0.00	0.00	0.00	0.00	1.88	0.00	443.29

		442.22	451.00	0.00282	0.00	0.00		0.20	0.00	0.00	442.53
606	400.00	442.22	451.00	12.00	0.31	0.00	0.31	0.31	1.87	0.00	442.53
		441.10	450.00	0.00280	0.00	0.00		1.46	16.37	0.00	441.46
604	375.00	441.10	450.00	12.00	0.31	0.00	0.31	0.36	1.34	0.00	441.46
		440.56	449.00	0.00144	0.00	0.00		1.16	22.83	0.00	440.92
600	360.00	440.56	449.00	12.00	0.31	0.00	0.31	0.28	2.29	0.00	440.84
		439.05	447.00	0.00419	0.00	0.00		1.70	13.38	0.00	439.34
603	190.00	439.05	447.00	12.00	0.31	0.00	0.31	0.29	2.10	0.00	439.34
		438.38	446.06	0.00353	0.00	0.00		1.59	14.59	0.00	439.29
566	275.00	438.30	446.06	18.00	1.64	0.00	1.64	0.66	2.51	0.00	439.29
		438.14	446.00	0.00058	0.00	0.00		1.33	65.07	0.00	439.13
564	634.00	438.14	446.00	18.00	1.64	0.00	1.64	0.65	2.59	0.00	439.11
		437.75	446.00	0.00062	0.00	0.00		1.36	63.28	0.00	438.83
562	131.00	437.75	446.00	18.00	1.64	0.00	1.64	0.65	2.58	0.00	438.83
		437.67	446.50	0.00061	0.00	0.00		1.35	63.51	0.00	438.83
528	124.00	437.50	446.50	21.00	2.55	0.00	2.55	0.76	3.16	0.00	438.83
		437.45	446.50	0.00040	0.00	0.00		1.31	80.89	0.00	438.78
526	270.00	437.45	446.50	21.00	2.55	0.00	2.55	0.76	3.17	0.00	438.77
		437.34	446.00	0.00041	0.00	0.00		1.31	80.48	0.00	438.69
524	155.00	437.34	446.00	21.00	2.55	0.00	2.55	0.77	3.09	0.00	438.69
		437.28	446.00	0.00039	0.00	0.00		1.29	82.56	0.00	438.68
522	700.00	437.28	446.00	21.00	2.76	0.00	2.76	0.80	3.14	0.00	438.68
		437.00	445.00	0.00040	0.00	0.00		1.33	87.84	0.00	438.41
520	280.00	437.00	445.00	21.00	2.76	0.00	2.76	0.81	3.12	0.00	438.41
		436.89	444.00	0.00039	0.00	0.00		1.32	88.63	0.00	438.30
518	350.00	436.89	444.00	21.00	2.76	0.00	2.76	0.80	3.14	0.00	438.29
		436.75	443.00	0.00040	0.00	0.00		1.33	87.84	0.00	438.15
516	309.00	436.75	443.00	21.00	2.76	0.00	2.76	0.79	3.23	0.00	438.13
		436.62	443.00	0.00042	0.00	0.00		1.36	85.65	0.00	438.11

514	710.00	436.62	443.00	21.00	2.95	0.00	2.95	0.85	3.12	0.00	438.11
		436.34	442.00	0.00039	0.00	0.00		1.34	94.53	0.00	437.83
512	348.00	436.34	442.00	18.00	2.95	0.00	2.95	0.65	4.68	0.00	437.31
		435.64	441.00	0.00201	0.00	0.00		2.45	63.14	0.00	436.61
510	372.00	435.64	441.00	18.00	2.95	0.00	2.95	0.65	4.65	0.00	436.61
		434.90	440.00	0.00199	0.00	0.00		2.44	63.49	0.00	435.87
508	338.00	434.90	440.00	18.00	2.95	0.00	2.95	0.46	8.60	0.00	435.58
		432.60	440.00	0.00680	0.00	0.00		3.74	34.33	0.00	433.36
506	415.00	432.60	440.00	18.00	2.95	0.00	2.95	0.51	7.09	0.00	433.36
		430.68	438.00	0.00463	0.00	0.00		3.27	41.63	0.00	431.44
504	20.00	430.68	438.00	18.00	2.95	0.00	2.95	0.28	21.99	0.00	431.10
		429.79	438.00	0.04450	0.00	0.00		7.26	13.42	0.00	430.87
502	344.00	429.79	438.00	18.00	2.95	0.00	2.95	0.72	3.97	0.00	430.87
		429.29	438.00	0.00145	0.00	0.00		2.18	74.28	0.00	430.37
500	400.00	429.29	438.00	18.00	3.00	0.00	3.00	0.61	5.19	0.00	430.21
		428.30	439.00	0.00247	0.00	0.00		2.65	57.94	0.00	429.28
498	404.00	428.30	439.00	18.00	3.00	0.00	3.00	0.65	4.67	0.00	429.28
		427.49	436.00	0.00200	0.00	0.00		2.46	64.37	0.00	428.47
496	120.00	427.49	436.00	18.00	3.00	0.00	3.00	0.61	5.21	0.00	428.41
		427.19	436.00	0.00250	0.00	0.00		2.66	57.65	0.00	428.19
494	340.00	427.19	436.00	18.00	3.00	0.00	3.00	0.67	4.56	0.00	428.19
		426.54	435.00	0.00191	0.00	0.00		2.42	65.92	0.00	427.54
492	360.00	426.54	435.00	18.00	3.00	0.00	3.00	0.66	4.63	0.00	427.53
		425.83	434.00	0.00197	0.00	0.00		2.44	64.91	0.00	426.83
490	450.00	425.83	434.00	18.00	3.00	0.00	3.00	0.67	4.53	0.00	426.83
		424.98	433.00	0.00189	0.00	0.00		2.41	66.32	0.00	425.98
488	200.00	424.98	433.00	18.00	3.00	0.00	3.00	0.67	4.54	0.00	425.98
		424.60	433.00	0.00190	0.00	0.00		2.41	66.13	0.00	425.60

486	200.00	424.60	433.00	18.00	3.00	0.00	3.00	0.67	4.54	0.00	425.60
		424.22	433.00	0.00190	0.00	0.00		2.41	66.13	0.00	425.22
484	260.00	424.22	433.00	18.00	3.00	0.00	3.00	0.67	4.53	0.00	425.22
		423.73	432.55	0.00188	0.00	0.00		2.41	66.40	0.00	424.73
724	463.00	469.62	482.00	12.00	0.00	0.00	0.00	0.00	2.50	0.00	469.62
		467.30	480.00	0.00501	0.00	0.00		0.20	0.00	0.00	467.47
722	485.00	467.30	480.00	12.00	0.11	0.00	0.11	0.17	2.50	0.00	467.47
		464.87	475.00	0.00501	0.00	0.00		1.39	4.24	0.00	465.04
720	375.00	464.87	475.00	12.00	0.11	0.00	0.11	0.17	2.50	0.00	465.04
		463.00	468.00	0.00499	0.00	0.00		1.39	4.25	0.00	463.17
718	262.00	462.50	468.00	18.00	0.11	0.00	0.11	0.13	4.17	0.00	462.70
		462.08	468.00	0.00160	0.00	0.00		0.90	2.54	0.00	462.28
716	504.00	462.08	468.00	18.00	0.11	0.00	0.11	0.13	4.18	0.00	462.28
		461.27	470.00	0.00161	0.00	0.00		0.90	2.54	0.00	461.47
714	505.00	461.27	470.00	12.00	0.11	0.00	0.11	0.13	4.61	0.00	461.40
		452.69	462.00	0.01699	0.00	0.00		2.17	2.30	0.00	452.90
712	425.00	452.69	462.00	18.00	0.11	0.00	0.11	0.14	3.88	0.00	452.90
		452.10	459.00	0.00139	0.00	0.00		0.86	2.73	0.00	452.31
710	485.00	452.10	459.00	18.00	0.11	0.00	0.11	0.13	4.18	0.00	452.30
		451.32	457.00	0.00161	0.00	0.00		0.90	2.54	0.00	451.52
708	390.00	451.32	457.00	12.00	0.11	0.00	0.11	0.17	2.50	0.00	451.49
		449.37	455.00	0.00500	0.00	0.00		1.39	4.25	0.00	449.55
706	560.00	449.37	455.00	10.00	0.11	0.00	0.11	0.21	1.54	0.00	449.55
		446.57	451.00	0.00500	0.00	0.00		1.40	6.90	0.00	446.85
704	560.00	446.57	451.00	10.00	0.30	0.00	0.30	0.33	1.54	0.00	446.85
		443.77	449.00	0.00500	0.00	0.00		1.81	19.34	0.00	444.05
702	58.00	443.77	449.00	10.00	0.30	0.00	0.30	0.33	1.54	0.00	444.05
		443.48	449.00	0.00500	0.00	0.00		1.81	19.34	0.00	443.76
700	120.00	443.48	449.00	10.00	0.30	0.00	0.30	0.30	1.96	0.00	443.73

		442.50	448.00	0.00817	0.00	0.00		2.16	15.13	0.00	442.75
732	415.00	444.43	450.00	18.00	0.00	0.00	0.00	0.00	4.13	0.00	444.43
		443.78	448.00	0.00157	0.00	0.00		0.20	0.00	0.00	444.15
730	135.00	443.78	448.00	12.00	0.33	0.00	0.33	0.37	1.39	0.00	444.15
		443.57	448.00	0.00156	0.00	0.00		1.22	23.73	0.00	443.94
728	393.00	443.57	448.00	12.00	0.33	0.00	0.33	0.35	1.55	0.00	443.92
		442.81	448.00	0.00193	0.00	0.00		1.31	21.29	0.00	443.17
726	330.00	442.81	448.00	12.00	0.33	0.00	0.33	0.36	1.49	0.00	443.17
		442.22	448.00	0.00179	0.00	0.00		1.28	22.14	0.00	442.58
698	518.78	442.00	448.00	18.00	0.63	0.00	0.63	0.31	3.86	0.00	442.46
		441.29	448.00	0.00137	0.00	0.00		1.34	16.29	0.00	441.75
696	517.62	441.29	448.00	18.00	0.63	0.00	0.63	0.29	4.17	0.00	441.73
		440.46	449.00	0.00160	0.00	0.00		1.42	15.05	0.00	440.90
694	145.00	440.46	449.00	18.00	0.63	0.00	0.63	0.25	6.71	0.00	440.83
		439.86	450.00	0.00414	0.00	0.00		2.05	9.37	0.00	440.36
692	470.98	439.86	450.00	18.00	0.63	0.00	0.63	0.33	3.26	0.00	440.36
		439.40	448.00	0.00098	0.00	0.00		1.18	19.28	0.00	439.90
690	207.80	439.40	448.00	18.00	0.63	0.00	0.63	0.27	5.31	0.00	439.80
		438.86	448.00	0.00260	0.00	0.00		1.71	11.82	0.00	439.45
688	166.00	438.86	448.00	18.00	0.95	0.00	0.95	0.39	3.62	0.00	439.45
		438.66	447.00	0.00120	0.00	0.00		1.46	26.20	0.00	439.25
686	1005.00	437.85	447.00	27.00	0.95	0.00	0.95	0.25	10.08	0.00	438.41
		436.77	448.00	0.00107	0.00	0.00		1.37	9.41	0.00	437.33
684	444.00	436.77	448.00	27.00	0.95	0.00	0.95	0.25	10.00	0.00	437.33
		436.30	446.00	0.00106	0.00	0.00		1.37	9.48	0.00	436.86
682	200.00	436.30	446.00	27.00	0.95	0.00	0.95	0.25	10.19	0.00	436.85
		436.08	446.00	0.00110	0.00	0.00		1.38	9.30	0.00	436.63
680	497.00	436.08	446.00	27.00	0.95	0.00	0.95	0.25	10.13	0.00	436.63
		435.54	445.00	0.00109	0.00	0.00		1.38	9.36	0.00	436.11

678	230.00	435.54	445.00	27.00	0.95	0.00	0.95	0.25	9.51	0.00	436.11
		435.32	445.00	0.00096	0.00	0.00		1.31	9.97	0.00	435.89
676	115.00	435.32	445.00	27.00	0.95	0.00	0.95	0.24	11.10	0.00	435.85
		435.17	446.00	0.00130	0.00	0.00		1.47	8.54	0.00	435.72
674	64.00	435.17	446.00	27.00	0.95	0.00	0.95	0.25	10.17	0.00	435.72
		435.10	446.00	0.00109	0.00	0.00		1.38	9.32	0.00	435.66
672	880.00	435.10	446.00	27.00	0.95	0.00	0.95	0.25	10.05	0.00	435.66
		434.16	444.00	0.00107	0.00	0.00		1.37	9.44	0.00	434.75
670	300.00	434.16	444.00	18.00	1.05	0.00	1.05	0.39	4.04	0.00	434.75
		433.71	442.55	0.00150	0.00	0.00		1.62	26.01	0.00	434.30
668	353.00	433.71	442.55	18.00	1.05	0.00	1.05	0.39	4.04	0.00	434.30
		433.18	442.55	0.00150	0.00	0.00		1.62	26.00	0.00	433.77
758	575.00	435.98	440.00	12.00	0.00	0.00	0.00	0.00	1.60	0.00	435.98
		434.80	440.00	0.00205	0.00	0.00		0.20	0.00	0.00	434.80
756	335.00	434.80	440.00	12.00	0.00	0.00	0.00	0.00	1.55	0.00	434.80
		434.16	440.00	0.00191	0.00	0.00		0.20	0.00	0.00	434.65
754	320.00	434.16	440.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	434.65
		433.52	440.00	0.00200	0.00	0.00		1.60	38.69	0.00	434.01
752	445.00	433.52	440.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	434.01
		432.63	440.00	0.00200	0.00	0.00		1.60	38.69	0.00	433.12
750	110.00	432.63	440.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	433.12
		432.41	440.00	0.00200	0.00	0.00		1.60	38.69	0.00	432.90
748	425.00	432.41	440.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	432.90
		431.56	441.00	0.00200	0.00	0.00		1.60	38.69	0.00	432.05
746	170.00	431.56	441.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	432.05
		431.22	441.00	0.00200	0.00	0.00		1.60	38.69	0.00	431.71
744	315.00	431.22	441.00	12.00	0.61	0.00	0.61	0.49	1.59	0.00	431.71
		430.58	441.00	0.00203	0.00	0.00		1.61	38.38	0.00	431.07

742	360.00	430.58	441.00	12.00	0.61	0.00	0.61	0.49	1.57	0.00	431.07
		429.87	440.00	0.00197	0.00	0.00		1.60	38.96	0.00	430.36
740	320.00	429.87	440.00	12.00	0.61	0.00	0.61	0.49	1.58	0.00	430.36
		429.23	438.50	0.00200	0.00	0.00		1.60	38.69	0.00	429.78
738	300.00	429.23	438.50	12.00	0.77	0.00	0.77	0.55	1.59	0.00	429.78
		428.62	437.50	0.00203	0.00	0.00		1.73	48.04	0.00	429.21
736	315.00	428.62	437.50	12.00	0.77	0.00	0.77	0.59	1.41	0.00	429.21
		428.12	436.50	0.00159	0.00	0.00		1.59	54.37	0.00	428.71
734	345.00	428.12	436.50	12.00	0.77	0.00	0.77	0.59	1.41	0.00	428.71
		427.57	435.55	0.00159	0.00	0.00		1.59	54.25	0.00	428.29
784	506.00	421.69	430.00	10.00	0.31	0.00	0.31	0.44	0.98	0.00	422.06
		420.67	428.00	0.00202	0.00	0.00		1.35	32.12	0.00	421.04
782	448.00	420.67	428.00	10.00	0.31	0.00	0.31	0.44	0.97	0.00	421.04
		419.78	428.00	0.00199	0.00	0.00		1.34	32.36	0.00	420.17
780	305.00	419.78	428.00	10.00	0.57	0.00	0.57	0.47	1.58	0.00	420.17
		418.17	430.00	0.00528	0.00	0.00		2.25	35.92	0.00	418.56

Pump (PUM)

ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
	Elevations				Maximum Values					
779	418.17	418.17	0.00	Intake:	0.57	0.00	0.00	0.00	0.57	No overflow available
				Discharge:	0.57	0.00	0.00	0.00	0.57	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	d/D Par/Repl	HGL Up/Dn	Note

778	130.00	426.82	430.00	12.00	0.57	0.00	0.57	0.47	1.58	0.00	427.29
		426.56	430.00	0.00200	0.00	0.00		1.57	35.89	0.00	427.03
776	481.00	426.56	430.00	12.00	0.57	0.00	0.57	0.47	1.58	0.00	427.03
		425.60	430.00	0.00200	0.00	0.00		1.57	35.92	0.00	426.07
774	331.50	425.60	430.00	12.00	0.57	0.00	0.57	0.47	1.58	0.00	426.07
		424.94	430.00	0.00199	0.00	0.00		1.56	35.97	0.00	425.42
772	390.00	424.94	430.00	12.00	0.57	0.00	0.57	0.48	1.49	0.00	425.42
		424.25	433.00	0.00177	0.00	0.00		1.50	38.16	0.00	424.73
812	475.00	433.93	441.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	433.93
		432.98	440.00	0.00200	0.00	0.00		0.20	0.00	0.00	432.98
810	350.00	432.98	440.00	10.00	0.00	0.00	0.00	0.00	0.97	0.00	432.98
		432.28	440.00	0.00200	0.00	0.00		0.20	0.00	0.00	432.57
808	280.00	432.28	440.00	10.00	0.20	0.00	0.20	0.35	0.97	0.00	432.57
		431.72	439.00	0.00200	0.00	0.00		1.17	20.73	0.00	432.01
806	312.00	431.72	439.00	10.00	0.20	0.00	0.20	0.35	0.97	0.00	432.01
		431.10	438.00	0.00199	0.00	0.00		1.17	20.80	0.00	431.39
804	293.00	431.10	438.00	10.00	0.20	0.00	0.20	0.35	0.98	0.00	431.39
		430.51	438.00	0.00201	0.00	0.00		1.17	20.66	0.00	430.80
802	335.00	430.51	438.00	10.00	0.20	0.00	0.20	0.35	0.97	0.00	430.80
		429.84	437.50	0.00200	0.00	0.00		1.17	20.73	0.00	430.13
800	330.00	429.84	437.50	10.00	0.20	0.00	0.20	0.35	0.97	0.00	430.13
		429.18	437.50	0.00200	0.00	0.00		1.17	20.73	0.00	429.47
798	188.00	429.18	437.50	10.00	0.20	0.00	0.20	0.33	1.09	0.00	429.45
		428.71	437.00	0.00250	0.00	0.00		1.27	18.54	0.00	429.09
796	80.00	428.71	437.00	10.00	0.20	0.00	0.20	0.43	0.64	0.00	429.09
		428.64	436.50	0.00088	0.00	0.00		0.88	31.34	0.00	429.09
794	330.00	428.64	436.50	10.00	0.47	0.00	0.47	0.54	1.01	0.00	429.09
		427.93	435.00	0.00215	0.00	0.00		1.55	46.31	0.00	428.38

792	357.00	427.93	435.00	10.00	0.47	0.00	0.47	0.52	1.09	0.00	428.36
		427.04	434.00	0.00249	0.00	0.00		1.64	43.02	0.00	427.47
790	330.00	427.04	434.00	10.00	0.47	0.00	0.47	0.52	1.09	0.00	427.47
		426.21	433.00	0.00252	0.00	0.00		1.64	42.83	0.00	426.64
788	350.00	426.21	433.00	10.00	0.47	0.00	0.47	0.52	1.09	0.00	426.64
		425.33	432.00	0.00251	0.00	0.00		1.64	42.84	0.00	425.76
786	150.00	425.33	432.00	10.00	0.47	0.00	0.47	0.38	1.86	0.00	425.65
		424.23	433.00	0.00733	0.00	0.00		2.39	25.08	0.00	424.58
770	68.00	424.03	433.00	15.00	1.14	0.00	1.14	0.44	3.48	0.00	424.58
		423.83	433.00	0.00294	0.00	0.00		2.14	32.66	0.00	424.45
768	233.00	423.83	433.00	15.00	1.14	0.00	1.14	0.50	2.82	0.00	424.45
		423.38	433.50	0.00193	0.00	0.00		1.85	40.30	0.00	424.04
766	150.00	423.38	433.50	15.00	1.14	0.00	1.14	0.52	2.56	0.00	424.04
		423.14	433.50	0.00160	0.00	0.00		1.73	44.28	0.00	423.80

Pump (PUM)

	Elevations				Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
765	423.14	423.14	0.00	Intake:	1.14	0.00	0.00	0.00	1.14	No overflow available
				Discharge:	1.14	0.00	0.00	0.00	1.14	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

		Invert	Ground	Diam	Flow			Heads				
ID/Name	Length	Up/Dn	Up/Dn	Slope	San/Inf	Mis/Sto	DesignQ	Vel	Friction	Elev	Pressure	HP
Note												

764	318.00	423.14	433.50	8.00	1.14	0.00	1.14	3.25	1.67	6.26	7.93	1.0
		429.40	434.00	-0.01969	0.00	0.00						

Existing Pipe (EPI)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	QMax/%Cap	Par/Repl	HGL Up/Dn
762	237.00	429.40	434.00	15.00	1.14	0.00	1.14	0.53	2.50	0.00	430.07
		429.04	434.00	0.00152	0.00	0.00		1.70	45.44	0.00	429.71
760	305.00	429.04	434.00	15.00	1.14	0.00	1.14	0.41	4.12	0.00	429.55
		427.78	435.55	0.00413	0.00	0.00		2.43	27.56	0.00	428.29
850	425.00	453.84	464.00	12.00	0.77	0.00	0.77	0.51	1.81	0.00	454.35
		452.72	464.00	0.00264	0.00	0.00		1.89	42.61	0.00	453.24
848	433.00	452.72	464.00	12.00	0.77	0.00	0.77	0.52	1.81	0.00	453.24
		451.59	463.00	0.00261	0.00	0.00		1.89	42.81	0.00	452.12
846	274.00	451.59	463.00	12.00	0.80	0.00	0.80	0.53	1.80	0.00	452.12
		450.88	462.00	0.00259	0.00	0.00		1.90	44.51	0.00	451.41
844	498.00	450.88	462.00	12.00	0.80	0.00	0.80	0.53	1.77	0.00	451.41
		449.63	462.00	0.00251	0.00	0.00		1.88	45.22	0.00	450.21
842	690.00	449.63	462.00	12.00	0.80	0.00	0.80	0.58	1.53	0.00	450.21
		448.33	460.00	0.00188	0.00	0.00		1.71	52.20	0.00	448.91
840	497.00	448.33	460.00	12.00	0.80	0.00	0.80	0.54	1.72	0.00	448.87
		447.15	458.00	0.00237	0.00	0.00		1.85	46.50	0.00	447.92
838	317.00	447.15	458.00	12.00	0.80	0.00	0.80	0.51	1.88	0.00	447.92
Surcharged		446.25	458.00	0.00284	0.00	0.00		1.02	42.52	0.00	447.73
836	327.00	446.15	458.00	12.00	0.80	0.00	0.80	0.52	1.86	0.00	447.73
Surcharged		445.24	458.00	0.00278	0.00	0.00		1.02	42.95	0.00	447.54

834	238.00	445.24	458.00	12.00	0.80	0.00	0.80	0.48	2.15	0.00	447.54
		444.36	458.00	0.00370	0.00	0.00		1.02	37.26	0.00	447.40
Surcharged											
832	65.00	444.26	458.00	12.00	0.99	0.00	0.99	0.60	1.75	0.00	447.40
		444.10	458.00	0.00246	0.00	0.00		1.26	56.23	0.00	447.31
Surcharged											
830	50.00	443.99	458.00	12.00	0.99	0.00	0.99	0.39	3.81	0.00	447.31
		443.41	458.00	0.01160	0.00	0.00		1.26	25.90	0.00	447.24
Surcharged											
828	575.00	443.41	458.00	12.00	0.99	0.00	0.99	0.70	1.38	0.00	447.24
		442.54	453.00	0.00151	0.00	0.00		1.26	71.73	0.00	446.76
Surcharged											
826	775.00	442.54	453.00	12.00	1.67	0.00	1.67	1.00	1.22	10.00	446.76
Overloaded											
		441.61	452.00	0.00120	0.00	0.00		2.13	136.54	15.00	444.96
Surcharged											
824	200.00	441.61	452.00	12.00	1.67	0.00	1.67	1.00	1.06	10.00	444.96
Overloaded											
		441.43	452.00	0.00090	0.00	0.00		2.13	157.67	15.00	444.41
Surcharged											
822	150.00	441.43	452.00	12.00	1.67	0.00	1.67	1.00	1.08	10.00	444.41
Overloaded											
		441.29	451.00	0.00093	0.00	0.00		2.13	154.83	15.00	443.98
Surcharged											
820	415.00	441.29	451.00	12.00	1.67	0.00	1.67	1.00	1.06	10.00	443.98
Overloaded											
		440.92	450.00	0.00089	0.00	0.00		2.13	158.41	15.00	442.96
Surcharged											
818	200.00	440.92	450.00	12.00	1.67	0.00	1.67	1.00	1.06	10.00	442.96
Overloaded											
		440.74	450.00	0.00090	0.00	0.00		2.13	157.67	15.00	442.42
Surcharged											
816	195.00	440.74	450.00	12.00	1.67	0.00	1.67	1.00	1.04	10.00	442.42
Overloaded											

		440.57	449.00	0.00087	0.00	0.00		2.13	160.20	15.00	441.89
Surcharged											
814	165.00	440.57	449.00	12.00	1.67	0.00	1.67	1.00	1.07	10.00	441.89
Overloaded											
		440.42	449.00	0.00091	0.00	0.00		2.13	156.88	15.00	441.42
Surcharged											
298	450.00	440.42	449.00	15.00	1.72	0.00	1.72	0.74	2.22	0.00	441.34
		439.88	450.00	0.00120	0.00	0.00		1.78	77.53	0.00	440.80
296	450.00	439.88	450.00	15.00	1.72	0.00	1.72	0.55	3.63	0.00	440.56
		438.44	450.00	0.00320	0.00	0.00		2.50	47.48	0.00	439.12
294	450.00	438.44	450.00	15.00	1.72	0.00	1.72	0.55	3.63	0.00	439.12
		437.00	449.00	0.00320	0.00	0.00		2.50	47.48	0.00	437.68

Diversion (DIV)

	Elevations			Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
271	437.00	436.38	436.38	Intake:	1.90	0.00	0.00	0.00	1.90	
				Discharge:	1.90	0.00	0.00	0.00	1.90	
				Overflow:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	d/D QMax/%Cap	Par/Repl	HGL Up/Dn	Note
270	42.00	436.38	449.00	18.00	1.90	0.00	1.90	0.44	6.02	0.00	437.03	
		436.24	449.00	0.00333	0.00	0.00		2.55	31.55	0.00	436.89	
268	805.00	436.24	449.00	18.00	1.90	0.00	1.90	0.43	6.08	0.00	436.89	
		433.50	447.00	0.00340	0.00	0.00		2.57	31.22	0.00	434.15	
266	600.00	433.50	447.00	18.00	1.90	0.00	1.90	0.43	6.08	0.00	434.15	

		431.46	445.00	0.00340	0.00	0.00		2.57	31.24	0.00	432.11
264	595.00	431.46	445.00	18.00	1.90	0.00	1.90	0.43	6.10	0.00	432.11
		429.42	444.00	0.00343	0.00	0.00		2.58	31.11	0.00	430.08
262	600.00	429.40	444.00	18.00	2.06	0.00	2.06	0.45	6.02	0.00	430.08
		427.40	442.00	0.00333	0.00	0.00		2.61	34.21	0.00	428.14
260	1067.00	427.40	442.00	24.00	2.06	0.00	2.06	0.37	8.75	0.00	428.14
		425.78	439.00	0.00152	0.00	0.00		1.91	23.53	0.00	426.53
258	253.00	425.78	439.00	24.00	2.06	0.00	2.06	0.37	8.59	0.00	426.53
		425.41	439.00	0.00146	0.00	0.00		1.89	23.98	0.00	426.16
256	502.00	425.41	439.00	24.00	2.06	0.00	2.06	0.30	12.75	0.00	426.02
		423.79	434.50	0.00323	0.00	0.00		2.48	16.14	0.00	424.41
254	822.00	423.79	434.50	24.00	2.06	0.00	2.06	0.31	12.46	0.00	424.41
		421.26	435.00	0.00308	0.00	0.00		2.44	16.53	0.00	422.01
252	944.00	421.26	435.00	24.00	2.06	0.00	2.06	0.38	8.55	0.00	422.01
		419.89	431.00	0.00145	0.00	0.00		1.88	24.07	0.00	420.64
250	638.00	419.89	431.00	24.00	2.06	0.00	2.06	0.37	8.71	0.00	420.63
		418.93	434.50	0.00150	0.00	0.00		1.90	23.64	0.00	419.67
248	1068.00	418.93	434.50	24.00	2.06	0.00	2.06	0.37	8.80	0.00	419.67
		417.29	430.00	0.00154	0.00	0.00		1.92	23.40	0.00	418.03

Pump (PUM)

	Elevations			Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
889	415.00	415.00	0.00	Intake:	0.00	0.00	0.00	0.00	0.00	No overflow available
				Discharge:	0.00	0.00	0.00	0.00	0.00	No discharge
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

ID/Name / Note	Length	Invert Up/Dn	Ground Up/Dn	Diam / Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D / Vel	QMax/%Cap	Par/Repl	HGL Up/Dn
888	618.80	423.30	428.00	18.00	0.00	0.00	0.00	0.00	4.59	0.00	423.30
		422.10	430.00	0.00194	0.00	0.00		0.20	0.00	0.00	422.11
886	623.70	422.11	430.00	18.00	0.00	0.00	0.00	0.00	4.67	0.00	422.11
		420.86	432.00	0.00200	0.00	0.00		0.20	0.00	0.00	420.86
884	635.54	420.86	432.00	18.00	0.00	0.00	0.00	0.00	4.77	0.00	420.86
		419.53	434.00	0.00209	0.00	0.00		0.20	0.00	0.00	419.53
882	431.65	419.53	434.00	18.00	0.00	0.00	0.00	0.00	4.71	0.00	419.53
		418.65	433.00	0.00204	0.00	0.00		0.20	0.00	0.00	418.96
880	672.12	418.65	433.00	21.00	0.29	0.00	0.29	0.17	6.30	0.00	418.96
		417.57	432.00	0.00161	0.00	0.00		1.17	4.57	0.00	417.91
878	665.30	417.57	432.00	21.00	0.35	0.00	0.35	0.19	6.28	0.00	417.91
		416.51	434.00	0.00159	0.00	0.00		1.23	5.64	0.00	416.85
876	952.60	416.51	434.00	21.00	0.35	0.00	0.35	0.19	6.66	0.00	416.84
		414.80	437.00	0.00180	0.00	0.00		1.28	5.31	0.00	415.13

Pump (PUM)

ID/Name	Elevations Intake	Discharge	Overflow		Maximum Values San	Inf	Mis	Sto	Design	Note
875	414.77	414.77	0.00	Intake:	0.35	0.00	0.00	0.00	0.35	No
overflow available										
				Discharge:	0.35	0.00	0.00	0.00	0.35	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

ID/Name Note	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	QMax/%Cap	Par/Repl	HGL Up/Dn
874	550.00	430.83	437.00	24.00	0.35	0.00	0.35	0.17	7.78	0.00	431.18
		430.17	438.00	0.00120	0.00	0.00		1.10	4.55	0.00	430.52
872	175.07	430.17	438.00	24.00	0.35	0.00	0.35	0.17	7.78	0.00	430.52
		429.96	440.00	0.00120	0.00	0.00		1.10	4.55	0.00	430.31
870	893.95	429.96	440.00	24.00	0.35	0.00	0.35	0.17	7.77	0.00	430.31
		428.89	441.00	0.00120	0.00	0.00		1.10	4.56	0.00	429.24
868	660.05	428.79	441.00	24.00	0.52	0.00	0.52	0.19	9.45	0.00	429.17
		427.62	439.00	0.00177	0.00	0.00		1.41	5.47	0.00	428.00
866	660.00	427.62	439.00	24.00	0.52	0.00	0.52	0.19	9.53	0.00	428.00
		426.43	439.00	0.00180	0.00	0.00		1.41	5.43	0.00	426.81
864	1000.00	426.43	439.00	24.00	0.52	0.00	0.52	0.19	9.53	0.00	426.81
		424.63	438.00	0.00180	0.00	0.00		1.41	5.43	0.00	425.01
862	1000.00	424.63	438.00	24.00	0.52	0.00	0.52	0.19	9.53	0.00	425.01
		422.83	436.00	0.00180	0.00	0.00		1.41	5.43	0.00	423.21
860	1000.00	422.83	436.00	24.00	0.52	0.00	0.52	0.19	9.53	0.00	423.21
		421.03	430.00	0.00180	0.00	0.00		1.41	5.43	0.00	421.41
858	910.00	421.03	430.00	24.00	0.52	0.00	0.52	0.19	9.56	0.00	421.41
		419.38	432.00	0.00181	0.00	0.00		1.42	5.41	0.00	419.77
856	90.00	419.38	432.00	24.00	0.52	0.00	0.52	0.20	8.85	0.00	419.77
		419.24	432.00	0.00156	0.00	0.00		1.34	5.84	0.00	419.63
854	989.07	419.23	432.00	24.00	0.52	0.00	0.52	0.19	9.52	0.00	419.61
		417.45	430.00	0.00180	0.00	0.00		1.41	5.43	0.00	417.83
852	75.00	417.45	430.00	24.00	0.52	0.00	0.52	0.18	10.37	0.00	417.81
		417.29	430.00	0.00213	0.00	0.00		1.50	4.99	0.00	417.65

Pump (PUM)

ID/Name	Elevations: Intake	Discharge	Overflow		Maximum Values: San	Inf	Mis	Sto	Design	Note
247	417.29	417.29	0.00	Intake:	2.49	0.00	0.00	0.00	2.49	No
overflow available				Discharge:	2.49	0.00	0.00	0.00	2.49	
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Pressure Pipe (PRE)

ID/Name / Note	Length	Invert Up/Dn	Ground Up/Dn	Diam / Slope	Flow: San/Inf	Mis/Sto	DesignQ	Heads: Vel	Friction	Elev	Pressure	HP
246	600.00	417.29	430.00	16.00	2.49	0.00	2.49	1.79	0.46	4.55	5.01	1.4
		421.84	426.50	-0.00758	0.00	0.00						

Existing Pipe (EPI)

ID/Name / Note	Length	Invert Up/Dn	Ground Up/Dn	Diam / Slope	Flow: San/Inf	Mis/Sto	DesignQ	d/D Vel	QMax/%Cap	Par/Repl	HGL Up/Dn
244	550.00	421.84	426.50	36.00	2.49	0.00	2.49	0.27	20.94	0.00	422.65
		421.29	427.50	0.00100	0.00	0.00		1.68	11.92	0.00	422.14
242	752.40	421.29	427.50	36.00	2.49	0.00	2.49	0.28	18.22	0.00	422.14
		420.72	428.00	0.00076	0.00	0.00		1.51	13.69	0.00	421.57
240	473.00	420.62	428.00	36.00	2.49	0.00	2.49	0.27	20.87	0.00	421.43
		420.15	429.50	0.00099	0.00	0.00		1.68	11.95	0.00	420.96
238	505.00	420.15	429.50	36.00	2.49	0.00	2.49	0.27	21.04	0.00	420.96
		419.64	432.00	0.00101	0.00	0.00		1.69	11.86	0.00	420.46

236	497.00	419.64	432.00	36.00	2.63	0.00	2.63	0.27	21.00	0.00	420.46
		419.14	433.00	0.00101	0.00	0.00		1.71	12.50	0.00	419.96
234	320.00	419.14	433.00	36.00	2.63	0.00	2.63	0.27	20.94	0.00	419.96
		418.82	433.00	0.00100	0.00	0.00		1.70	12.54	0.00	419.64
232	718.00	418.82	433.00	36.00	2.63	0.00	2.63	0.27	20.82	0.00	419.64
		418.11	430.00	0.00099	0.00	0.00		1.70	12.61	0.00	419.09
230	22.00	418.11	430.00	24.00	2.63	0.00	2.63	0.49	6.77	0.00	419.09
		418.09	430.00	0.00091	0.00	0.00		1.72	38.78	0.00	419.08
228	75.00	418.09	430.00	24.00	2.63	0.00	2.63	0.32	14.89	0.00	419.08
		417.76	431.00	0.00440	0.00	0.00		2.97	17.63	0.00	419.08
892	22.95	438.85	442.40	15.00	0.00	0.00	0.00	0.00	26.25	0.00	438.85
		435.00	442.55	0.16776	0.00	0.00		0.20	0.00	0.00	435.00
666	274.00	433.18	442.55	18.00	1.05	0.00	1.05	0.39	4.03	0.00	433.77
		432.77	440.55	0.00150	0.00	0.00		1.62	26.04	0.00	433.36
664	292.00	432.77	440.55	18.00	1.05	0.00	1.05	0.39	4.05	0.00	433.36
		432.33	440.55	0.00151	0.00	0.00		1.63	25.95	0.00	432.92
662	300.00	432.33	440.55	18.00	1.05	0.00	1.05	0.39	4.04	0.00	432.92
		431.88	439.55	0.00150	0.00	0.00		1.62	26.01	0.00	432.47
660	300.00	431.88	439.55	18.00	1.05	0.00	1.05	0.39	4.04	0.00	432.47
		431.43	439.55	0.00150	0.00	0.00		1.62	26.01	0.00	432.06
658	329.00	431.43	439.55	18.00	1.17	0.00	1.17	0.42	3.94	0.00	432.06
		430.96	438.55	0.00143	0.00	0.00		1.64	29.71	0.00	431.59
656	339.00	430.96	439.55	18.00	1.17	0.00	1.17	0.41	4.12	0.00	431.58
		430.43	438.55	0.00156	0.00	0.00		1.70	28.40	0.00	431.05
654	200.00	430.43	438.55	18.00	1.17	0.00	1.17	0.42	4.04	0.00	431.05
		430.13	438.55	0.00150	0.00	0.00		1.67	28.99	0.00	430.76
652	123.00	430.13	438.55	18.00	1.17	0.00	1.17	0.42	3.99	0.00	430.76
		429.95	438.55	0.00146	0.00	0.00		1.66	29.35	0.00	430.61

650	371.40	429.95	438.55	18.00	1.17	0.00	1.17	0.44	3.63	0.00	430.61
		429.50	437.55	0.00121	0.00	0.00		1.55	32.26	0.00	430.16
648	350.00	429.50	437.55	18.00	1.17	0.00	1.17	0.42	4.06	0.00	430.12
		428.97	437.55	0.00151	0.00	0.00		1.68	28.85	0.00	429.59
646	50.00	428.97	437.55	18.00	1.17	0.00	1.17	0.41	4.17	0.00	429.58
		428.89	437.55	0.00160	0.00	0.00		1.72	28.07	0.00	429.52
644	250.00	428.89	437.55	18.00	1.17	0.00	1.17	0.42	4.01	0.00	429.52
		428.52	437.55	0.00148	0.00	0.00		1.67	29.19	0.00	429.18
642	300.00	428.52	437.55	18.00	1.31	0.00	1.31	0.44	4.04	0.00	429.18
		428.07	437.55	0.00150	0.00	0.00		1.73	32.38	0.00	428.73
640	300.00	428.07	437.55	18.00	1.31	0.00	1.31	0.44	4.04	0.00	428.73
		427.62	436.55	0.00150	0.00	0.00		1.73	32.38	0.00	428.29
638	170.00	427.62	436.55	18.00	1.31	0.00	1.31	0.44	4.00	0.00	428.29
		427.37	435.55	0.00147	0.00	0.00		1.71	32.70	0.00	428.29
636	50.00	427.37	435.55	18.00	1.31	0.00	1.31	0.42	4.42	0.00	428.29
		427.28	435.55	0.00180	0.00	0.00		1.84	29.55	0.00	428.29
634	300.00	427.28	435.55	21.00	3.09	0.00	3.09	0.58	5.88	0.00	428.29
		426.86	435.55	0.00140	0.00	0.00		2.14	52.44	0.00	427.88
632	300.00	426.86	435.55	21.00	3.09	0.00	3.09	0.58	5.81	0.00	427.88
		426.45	435.55	0.00137	0.00	0.00		2.12	53.07	0.00	427.47
630	300.00	426.45	435.55	21.00	3.09	0.00	3.09	0.58	5.88	0.00	427.46
		426.03	433.55	0.00140	0.00	0.00		2.14	52.44	0.00	427.07
628	300.00	426.03	433.55	21.00	3.22	0.00	3.22	0.59	5.88	0.00	427.07
		425.61	432.55	0.00140	0.00	0.00		2.17	54.79	0.00	426.65
626	345.00	425.61	432.55	21.00	3.22	0.00	3.22	0.59	5.93	0.00	426.64
		425.12	432.55	0.00142	0.00	0.00		2.18	54.40	0.00	426.15
624	370.00	425.12	432.55	21.00	3.22	0.00	3.22	0.59	5.89	0.00	426.15
		424.60	432.55	0.00141	0.00	0.00		2.17	54.69	0.00	425.63
622	370.00	424.60	432.55	21.00	3.22	0.00	3.22	0.59	5.89	0.00	425.63

		424.08	432.55	0.00141	0.00	0.00		2.17	54.69	0.00	425.11
620	200.00	424.08	432.55	21.00	3.27	0.00	3.27	0.59	5.99	0.00	425.11
		423.79	432.55	0.00145	0.00	0.00		2.21	54.62	0.00	424.85
618	45.00	423.79	432.55	21.00	3.27	0.00	3.27	0.61	5.74	0.00	424.85
		423.73	432.55	0.00133	0.00	0.00		2.14	56.96	0.00	424.79
482	360.00	416.10	432.55	18.00	5.80	0.00	5.80	0.56	11.64	0.00	416.94
		411.61	432.00	0.01247	0.00	0.00		5.66	49.86	0.00	412.45
480	360.00	411.36	432.00	21.00	5.80	0.00	5.80	0.45	17.23	0.00	412.15
		407.04	432.26	0.01200	0.00	0.00		5.47	33.70	0.00	408.03
893	483.65	436.42	449.00	12.00	0.00	0.00	0.00	0.00	3.87	0.00	436.42
		430.62	448.00	0.01199	0.00	0.00		0.20	0.00	0.00	430.62

Pump (PUM)

	Elevations				Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
894	430.62	430.62	0.00	Intake:	0.00	0.00	0.00	0.00	0.00	No
overflow available										
				Discharge:	0.00	0.00	0.00	0.00	0.00	No
discharge										
				Overflow:	0.00	0.00	0.00	0.00	0.00	
				Wet Well:	0.00	0.00	0.00	0.00	0.00	

Existing Pipe (EPI)

		Invert	Ground	Diam	Flow			d/D			HGL
ID/Name	Length	Up/Dn	Up/Dn	Slope	San/Inf	Mis/Sto	DesignQ	Vel	QMax/%Cap	Par/Repl	Up/Dn
Note											
895	363.64	443.00	448.00	15.00	0.00	0.00	0.00	0.00	2.95	0.00	443.00
		442.23	447.00	0.00212	0.00	0.00		0.20	0.00	0.00	442.54
226	250.00	442.23	447.00	15.00	0.27	0.00	0.27	0.25	2.87	0.00	442.54

		441.73	447.00	0.00200	0.00	0.00		1.27	9.45	0.00	442.30
224	260.00	441.73	448.00	15.00	0.27	0.00	0.27	0.25	2.87	0.00	442.30
		441.21	447.70	0.00200	0.00	0.00		1.27	9.45	0.00	442.30
146	304.00	441.21	447.70	21.00	2.74	0.00	2.74	0.62	4.60	0.00	442.30
		440.95	449.00	0.00086	0.00	0.00		1.74	59.66	0.00	442.07
144	328.00	440.95	449.00	21.00	2.74	0.00	2.74	0.64	4.43	0.00	442.07
		440.69	449.00	0.00079	0.00	0.00		1.70	61.97	0.00	441.81

Diversion (DIV)

	Elevations				Maximum Values					
ID/Name	Intake	Discharge	Overflow		San	Inf	Mis	Sto	Design	Note
143	440.69	440.27	440.27	Intake:	2.74	0.00	0.00	0.00	2.74	
				Discharge:	1.37	0.00	0.00	0.00	1.37	
				Overflow:	1.37	0.00	0.00	0.00	1.37	Overflow
active										

Existing Pipe (EPI)

ID/Name	Length	Invert Up/Dn	Ground Up/Dn	Diam Slope	Flow San/Inf	Flow Mis/Sto	Flow DesignQ	d/D Vel	QMax/%Cap	Par/Repl	HGL Up/Dn
Note											
142	454.80	440.27	449.00	21.00	1.37	0.00	1.37	0.32	7.70	0.00	440.83
		439.18	447.00	0.00240	0.00	0.00		2.01	17.82	0.00	439.74
140	493.00	439.18	447.00	21.00	1.37	0.00	1.37	0.32	7.69	0.00	439.74
		438.00	446.00	0.00239	0.00	0.00		2.01	17.83	0.00	438.56
138	493.00	438.00	446.00	21.00	1.37	0.00	1.37	0.32	7.69	0.00	438.56
		436.82	445.00	0.00239	0.00	0.00		2.01	17.83	0.00	437.38
136	491.55	436.82	445.00	21.00	1.37	0.00	1.37	0.32	7.70	0.00	437.38
		435.64	443.00	0.00240	0.00	0.00		2.01	17.81	0.00	436.20

134	340.45	435.45	443.00	21.00	1.37	0.00	1.37	0.33	7.33	0.00	436.02
		434.71	442.00	0.00217	0.00	0.00		1.94	18.71	0.00	435.28
132	328.05	434.11	442.00	21.00	1.37	0.00	1.37	0.47	3.78	0.00	434.93
		433.92	442.00	0.00058	0.00	0.00		1.23	36.25	0.00	434.74
130	336.95	433.82	442.00	21.00	1.37	0.00	1.37	0.32	7.76	0.00	434.38
		433.00	441.00	0.00243	0.00	0.00		2.02	17.68	0.00	433.59
128	324.00	433.00	441.00	21.00	1.37	0.00	1.37	0.34	6.99	0.00	433.59
		432.36	441.00	0.00198	0.00	0.00		1.88	19.63	0.00	432.95
126	410.00	432.36	441.00	21.00	1.37	0.00	1.37	0.33	7.37	0.00	432.93
		431.46	440.00	0.00220	0.00	0.00		1.95	18.62	0.00	432.03
124	409.05	431.46	440.00	21.00	1.37	0.00	1.37	0.32	7.85	0.00	432.01
		430.44	439.00	0.00249	0.00	0.00		2.04	17.47	0.00	431.03
122	424.25	430.44	439.00	21.00	1.46	0.00	1.46	0.34	7.36	0.00	431.03
		429.51	441.00	0.00219	0.00	0.00		1.98	19.81	0.00	430.17
120	200.00	429.51	441.00	21.00	1.46	0.00	1.46	0.37	6.09	0.00	430.17
		429.21	441.00	0.00150	0.00	0.00		1.75	23.95	0.00	429.87
118	400.00	429.21	441.00	21.00	1.46	0.00	1.46	0.37	6.09	0.00	429.87
		428.61	440.00	0.00150	0.00	0.00		1.75	23.95	0.00	429.54
116	60.00	428.61	440.00	21.00	1.46	0.00	1.46	0.37	6.09	0.00	429.54
		428.52	440.00	0.00150	0.00	0.00		1.75	23.95	0.00	429.54
890	46.07	440.69	449.00	21.00	1.37	0.00	1.37	0.35	6.55	0.00	441.39
		440.61	449.00	0.00174	0.00	0.00		1.80	20.93	0.00	441.39
218	654.00	440.61	449.00	18.00	1.37	0.00	1.37	0.52	3.16	0.00	441.39
		440.01	447.00	0.00092	0.00	0.00		1.47	43.45	0.00	440.79
216	332.00	440.01	447.00	18.00	1.48	0.00	1.48	0.50	3.66	0.00	440.76
		439.60	446.00	0.00123	0.00	0.00		1.67	40.35	0.00	440.36
214	331.00	439.60	446.00	18.00	1.48	0.00	1.48	0.51	3.58	0.00	440.36
		439.21	445.50	0.00118	0.00	0.00		1.65	41.31	0.00	440.04
212	319.00	439.21	445.50	18.00	1.48	0.00	1.48	0.55	3.03	0.00	440.04

		438.94	445.00	0.00085	0.00	0.00		1.47	48.73	0.00	439.77
210	328.00	438.94	445.00	18.00	1.59	0.00	1.59	0.55	3.31	0.00	439.76
		438.61	443.00	0.00101	0.00	0.00		1.59	47.98	0.00	439.45
208	282.00	438.61	443.00	18.00	1.59	0.00	1.59	0.56	3.17	0.00	439.45
		438.35	444.00	0.00092	0.00	0.00		1.54	50.12	0.00	439.20
206	281.00	438.35	444.00	18.00	1.59	0.00	1.59	0.57	3.11	0.00	439.20
		438.10	444.00	0.00089	0.00	0.00		1.52	51.02	0.00	438.95
204	291.00	438.10	444.00	18.00	1.59	0.00	1.59	0.57	3.12	0.00	438.95
		437.84	444.00	0.00089	0.00	0.00		1.53	50.91	0.00	438.69
202	277.00	437.84	444.00	18.00	1.59	0.00	1.59	0.55	3.25	0.00	438.67
		437.57	442.50	0.00097	0.00	0.00		1.57	48.75	0.00	438.40
200	290.00	437.57	442.50	18.00	1.59	0.00	1.59	0.53	3.57	0.00	438.36
		437.23	442.00	0.00117	0.00	0.00		1.68	44.45	0.00	438.02
198	289.00	437.23	442.00	18.00	1.59	0.00	1.59	0.51	3.73	0.00	438.00
		436.86	443.00	0.00128	0.00	0.00		1.73	42.53	0.00	437.63
196	276.00	436.86	443.00	18.00	1.67	0.00	1.67	0.38	6.93	0.00	437.42
		435.64	444.00	0.00442	0.00	0.00		2.71	24.17	0.00	436.45
56	705.00	435.51	444.00	24.00	3.26	0.00	3.26	0.47	8.91	0.00	436.45
		434.40	442.00	0.00157	0.00	0.00		2.22	36.54	0.00	435.44
54	640.00	434.40	442.00	24.00	3.26	0.00	3.26	0.52	7.43	0.00	435.44
		433.70	440.00	0.00109	0.00	0.00		1.95	43.84	0.00	434.74
52	214.01	428.48	440.00	24.00	4.57	0.00	4.57	0.53	10.06	0.00	429.54
		428.05	440.00	0.00201	0.00	0.00		2.68	45.44	0.00	429.12
50	325.07	428.05	440.00	24.00	4.57	0.00	4.57	0.53	10.04	0.00	429.12
		427.40	438.00	0.00200	0.00	0.00		2.67	45.55	0.00	428.47
48	327.51	427.30	438.00	24.00	4.57	0.00	4.57	0.53	10.08	0.00	428.36
		426.64	438.00	0.00202	0.00	0.00		2.68	45.38	0.00	427.71
46	370.00	426.64	438.00	24.00	4.57	0.00	4.57	0.53	10.04	0.00	427.71
		425.90	437.00	0.00200	0.00	0.00		2.67	45.55	0.00	426.97

44	358.88	425.80	437.00	24.00	4.57	0.00	4.57	0.53	10.06	0.00	426.86
		425.08	435.00	0.00201	0.00	0.00		2.68	45.48	0.00	426.16
42	203.45	425.08	435.00	24.00	4.74	0.00	4.74	0.54	10.08	0.00	426.16
		424.67	434.00	0.00202	0.00	0.00		2.71	47.00	0.00	425.76
40	194.00	424.67	434.00	24.00	4.74	0.00	4.74	0.54	10.07	0.00	425.76
		424.28	434.00	0.00201	0.00	0.00		2.71	47.06	0.00	425.37
38	902.15	424.28	434.00	24.00	4.76	0.00	4.76	0.54	10.03	0.00	425.37
		422.48	432.00	0.00200	0.00	0.00		2.70	47.44	0.00	423.57
36	398.94	422.48	432.00	24.00	4.76	0.00	4.76	0.54	10.05	0.00	423.57
		421.68	433.00	0.00201	0.00	0.00		2.71	47.32	0.00	422.77
34	655.52	421.68	433.00	24.00	4.76	0.00	4.76	0.54	10.23	0.00	422.76
		420.32	432.00	0.00207	0.00	0.00		2.74	46.52	0.00	421.42
32	605.61	420.32	432.00	24.00	4.84	0.00	4.84	0.55	10.04	0.00	421.42
		419.11	431.00	0.00200	0.00	0.00		2.72	48.20	0.00	420.21
30	361.09	417.76	431.00	27.00	7.38	0.00	7.38	0.59	13.73	0.00	419.08
		417.04	430.00	0.00199	0.00	0.00		3.04	53.80	0.00	418.36
28	359.83	416.94	430.00	27.00	7.38	0.00	7.38	0.58	13.75	0.00	418.26
		416.22	430.00	0.00200	0.00	0.00		3.05	53.71	0.00	417.54
26	649.92	416.22	430.00	27.00	7.46	0.00	7.46	0.59	13.75	0.00	417.54
		414.92	430.00	0.00200	0.00	0.00		3.06	54.26	0.00	416.29
24	361.00	414.92	430.00	27.00	7.89	0.00	7.89	0.61	13.82	0.00	416.29
		414.19	430.00	0.00202	0.00	0.00		3.12	57.08	0.00	415.57
22	339.96	414.19	430.00	27.00	7.89	0.00	7.89	0.61	13.65	0.00	415.57
		413.52	430.00	0.00197	0.00	0.00		3.10	57.82	0.00	415.00
20	330.25	413.52	430.00	27.00	7.89	0.00	7.89	0.66	12.20	0.00	415.00
		413.00	430.00	0.00157	0.00	0.00		2.86	64.68	0.00	414.48
18	332.00	413.00	430.00	27.00	7.89	0.00	7.89	0.58	14.71	0.00	414.32
		412.24	430.00	0.00229	0.00	0.00		3.26	53.65	0.00	413.61

16	425.00	412.14	430.00	27.00	8.85	0.00	8.85	0.65	13.75	0.00	413.61
		411.29	430.00	0.00200	0.00	0.00		3.22	64.38	0.00	412.76
14	425.00	411.29	430.00	27.00	8.85	0.00	8.85	0.65	13.75	0.00	412.76
		410.44	428.00	0.00200	0.00	0.00		3.22	64.38	0.00	411.91
12	425.00	410.34	428.00	27.00	8.85	0.00	8.85	0.65	13.75	0.00	411.81
		409.49	427.60	0.00200	0.00	0.00		3.22	64.38	0.00	410.96
10	45.00	409.49	427.60	30.00	8.85	0.00	8.85	0.33	45.41	0.00	410.50
		408.93	427.50	0.01244	0.00	0.00		5.97	19.49	0.00	410.50
8	350.00	408.93	427.50	30.00	10.63	0.00	10.63	0.63	17.54	0.00	410.50
		408.28	428.50	0.00186	0.00	0.00		3.27	60.60	0.00	410.05
6	385.00	408.28	428.50	30.00	10.63	0.00	10.63	0.71	14.67	0.00	410.05
		407.78	430.50	0.00130	0.00	0.00		2.88	72.47	0.00	409.55
4	420.00	407.78	430.50	30.00	10.63	0.00	10.63	0.71	14.60	0.00	409.55
		407.24	432.26	0.00129	0.00	0.00		2.87	72.84	0.00	409.01
1	65.00	407.00	432.26	42.00	16.32	0.00	16.32	0.29	109.40	0.00	408.03
		406.22	432.00	0.01200	0.00	0.00		6.81	14.92	0.00	407.25

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